

# Western Industry

August  
1958

Vol. XXIII No. 8



TAPPING EMPLOYEES IDEAS . . . p. 23

## Outdoor

### Storage and Handling

8 pages

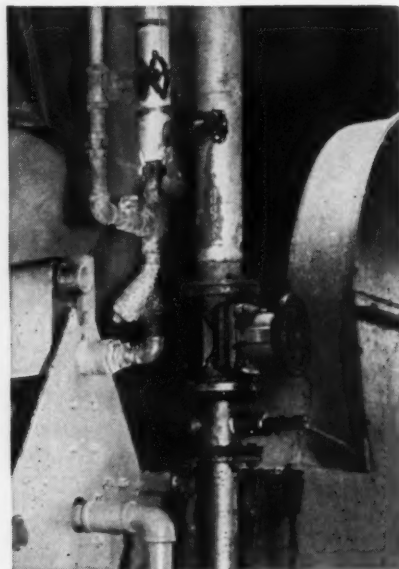
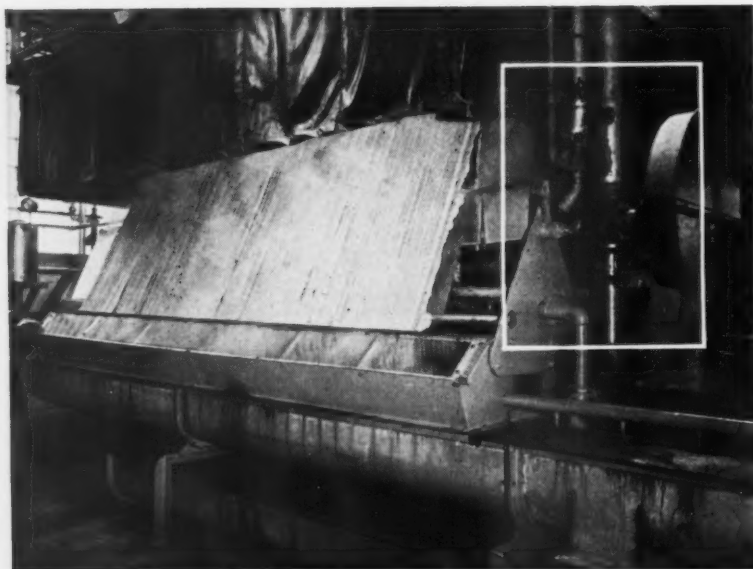
best manuals

ELECTRICAL MAINTENANCE . . . . p. 26

## STANDARD ENGINEER'S FIELD REPORT

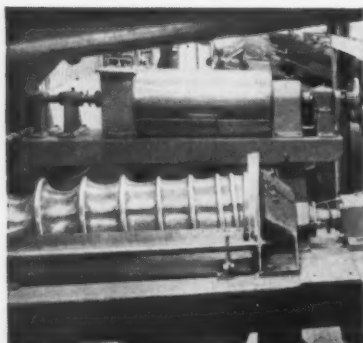
**Chevron**  
PRODUCT **Industrial Grease**  
Exchange Orange Products  
FIRM **Ontario, California**

# Chevron Grease eliminates separation in bearings



Heat, moisture and fruit acids create a constant problem of rust, corrosion and grease separation on anti-friction bearings at Sunkist Growers' by-products plant. (See close-up) But Chevron Industrial Grease protects all equipment. Maintenance Supervisor Gene Gilbert says, "This grease even holds up

in the steamy air around our vacuum drum filter (above) used in producing pectin...other greases we've used tended to separate into oil and soap base in packed bearings...even caused failures. But not Chevron Industrial Grease. It never separates, and does a better job of fighting rust and corrosion, too!"



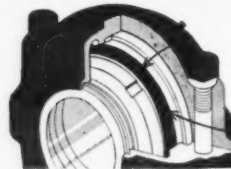
Juice finishers (left) and pulp drier (right) use Chevron Industrial Grease, demonstrating wide application of this lubricant at Exchange Orange Products. Because this grease is waterproof, frequent washing down of finishers has no effect on lubrication efficiency. In pulp drier and dehydration equipment Chevron Industrial Grease works in temperatures up to 300°—yet this same lubricant does equally well in quick freeze votators at low temperatures. Exchange Orange Products operates continuously 9 months a year, producing orange juice, syrups, oil, pectin, dairy feed and a long list of other by-products from oranges not marketed as fresh fruit.



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gives you top quality  
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you save more per  
dollar invested.

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HELP YOU SAVE MORE ON  
SOLID TIRES.



August, 1958  
Vol. XXIII, No. 8

<b>Tapping employees production ideas</b> .....	<b>23</b>
Your employees can supply you with a gold mine of ideas. Here's how one firm is tapping this vein to save thousands of dollars in time and money.	
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A Western chapter of the American Institute of Plant Engineers looks into this subject and comes up with some vital answers. Some may surprise you.	
<b>Take to the air to get there first</b> .....	<b>28</b>
The airplane has supplanted the six-gun as the Western "equalizer." Many a small firm has the jump on the bigger fellows by taking to the air.	
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You can improve operations all along the line and set your sights for the future when you move into your new plant. Here's how one company did it.	
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Keeping a finger on thousands of parts can require a lot of hands. But this firm has achieved maximum control with minimum help. It can work for you.	
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Our Know-How Notebook #1 tells how special filters can work for you ... smoke can be controlled ... skelp and strip steel handled ... castings cleaned ... and other problems solved.	
<b>Today's best manuals on welding</b> .....	<b>55</b>
Our Know-How Notebook #2 contains almost 50 best manuals on welding equipment. Latest methods, material, and know-how data are yours for the asking. Use postcard, p. 75.	

**OUTDOOR STORAGE and HANDLING—A Special WI report (8 pages) detailing: "What can you store" ... "Storage means handling" ... "You don't have to be a genius" ... "But mark this ..." Followed by 30 best manuals on outdoor storage and handling equipment. Section starts on p. 35.**

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**The Essential Publication for Manufacturing Management in the New Industrial West**



# NEW BRASS CUTS POLISHING COST

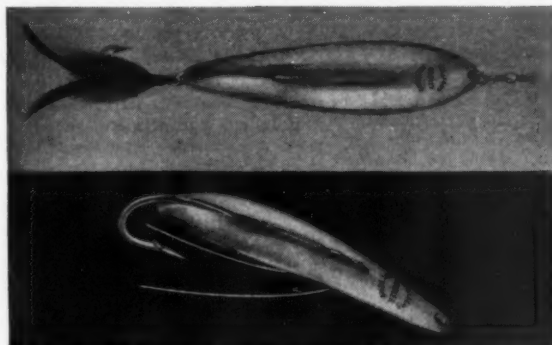
also gives you clean, easy drawing and forming, plus higher physical properties—Formbrite,<sup>®</sup> Superfine-Grain Drawing Brass by Anaconda



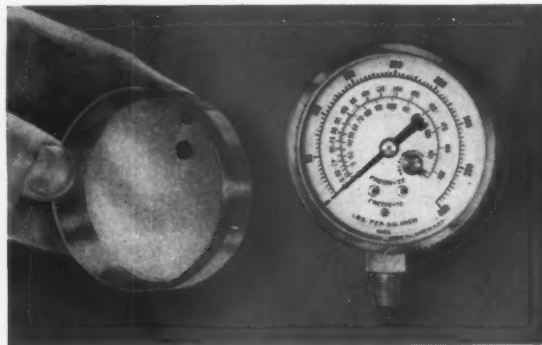
**AIRGUIDE** Instrument Co., Chicago, gets high luster finish on bezels for its famous weather instruments at 50% lower cost since it switched from ordinary drawing brass to Formbrite. Airguide does the presswork—says Formbrite “draws and forms excellently.” Driscoll & Co. (above) polishes the bezels.



**BAROMETER** in Chippendale style, “Mayfair,” is one of the broad line of brass-trimmed instruments made for home and marine use by Airguide.



**FISHING LURES** made by Williams Gold Refining Co., Inc.—“Wabler,” top and “Weedler,” below—are polished for plating by tumbling. Switching from ordinary yellow brass to Formbrite cut costs more than 40%



**MARSH** Instrument Co., Skokie, Ill., dropped a finishing operation and gets a “mirror finish” with a light buff, by using Formbrite. Marsh reports that finishing cost was cut 40% and that “forming is “excellent.”

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This installation consisting of seven hand-propelled cranes on a flexibly suspended runway is used for stripping wire blocks in a large steel mill. Note how easy it is with the Cleveland Tramrail design to position the

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WESTERN INDUSTRY — August 1958

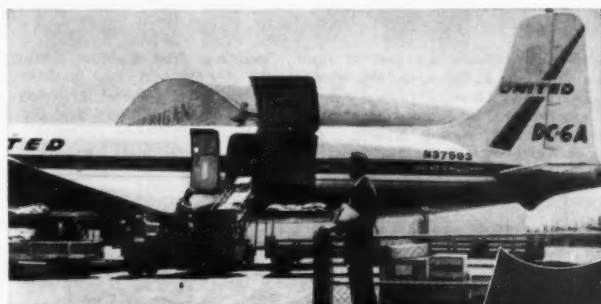
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# WESTERN MEETING REPORTS

**SAN DIEGO AMHS**—New officers pictured (left to right) are: President, **Don Dearth**, Standard Iron Works; Vice President, **Jack A. Prince**, Ryan Aeronautical Co.; Secretary, **Curtis G. Koller**, Klauber-Wagenheim Co.; Treasurer, **Charles W. McCormick**, Langley Corp.



## WESCON technical sessions, exhibits

**FORTY-TWO TECHNICAL SESSIONS**—including two special programs—are on the four-day agenda for the Western Electronic Show and Convention, scheduled Aug. 19-22 at the Pan-Pacific Auditorium and Ambassador Hotel, Los Angeles.

For the first time, 1958 technical program speakers will be guided by a special booklet on presenting papers before WESCON audiences, prepared this year. It is a concise series of suggestions on how to achieve the most effective presentation, authored by **Norbert Lorentz** (IRE professional groups on Engineering Writing and Speech), **Mel Jones**, **Joseph Cryden** and **Carl Kuldt**, all working under general supervision of the technical program committee chairmanned by **R. C. Hansen**.

In the first of two special sessions, six speakers will discuss "Biological Measurement Problems of Space Travel," under chairmanship of **Dr. Robert Tschirgi** of UCLA on Wednesday evening (August 20). That afternoon, an invited-paper session on "Industry Looks at Fusion Power" is scheduled.

The WESCON exhibit at Pan-Pacific, first sold out early this spring, then expanded and sold out again, will present about 900 electronic exhibits by more than 700 different companies.

**PRODUCTION EQUIPMENT** and materials used by the electronic industry will be exhibited separately at the 1958 Western Electronic Show and Convention in Los Angeles, announced **Don Larson**, business manager of WESCON.

The four-day show, August 19-22, includes exhibits by more than 700 electronic firms, will include a separate pavilion at Pan-Pacific auditorium devoted exclusively to production equipment and materials. It is the first time that exhibits in these categories have been given a separate exhibit area.

"The great number of companies exhibiting production equipment at WESCON and the special interest these displays hold for electronic production executives prompted the decision for a specialized 'show within a show,'" Larson commented.

WESCON, which also includes a major technical convention concurrently at the Ambassador Hotel, will require the full Pan-Pacific auditorium plus four additional pavilions.

It has been announced that a booth at the 7th Western Packaging and Materials Handling Exposition, August 11-13, will be devoted to giving information about the Society of Industrial Packaging and Materials Handling Engineers.

The booth will be staffed by members from both the San Francisco and San Jose chapters of SIPMHE, who will be available to discuss the principles and objects of the society.

Announcement was also made that there will be no regular July meeting of SIPMHE. The next scheduled gathering will be in August.

**CENTRAL CALIF. SIPMHE**—New officers are (left to right): Secretary, **Fred Hannum**, Crown Zellerbach Corp.; Treasurer, **Charles F. Courtman**, Minnesota Mining and Mfg. Co.; Past President, **R. A. Koller**, Food Machinery and Chemical Corp.; Vice President-Education, **Robert A. Sherry**, Martin Bros. Container and Timber Prod. Corp.; President, **Stuart E. Langdoc**, National Seal Div.; Vice President—Programs, **William R. Watson** (holding plaque), Diagraph-Bradley Industries, Inc.; Exec. Vice President, **R. B. Cambridge**, Sierra Skyline Lumber Co.; Vice President—membership, **Henry Weber**, Eitel-McCullough Inc.





TOOLING FOR THE SPACE AGE!

# ASTE



# WESTERN



# TOOL



# SHOW

## AND CONFERENCE

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LOS ANGELES—SEPT. 29-OCT. 3

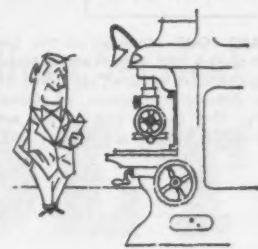
For more information, write:  
AMERICAN SOCIETY OF TOOL ENGINEERS  
10700 PURITAN AVE.  
DETROIT 38, MICH.



## SEE

 everything that's new in tooling and production equipment.

All the very latest advances and improvements in more than thirty basic categories of industrial products will be on display. It's your chance to see tooling's future, *your* future at one time under one roof. Don't miss it! Plan *now* to attend the West's most outstanding industrial event.



## ATTEND

 fact-packed technical conferences, symposia and panels.

Fifteen major symposia and panels ... conducted by eminent authorities ... will be devoted to subjects of vital interest, including: Tooling Space Airframes; Sandwich Construction for Aircraft; Forming the Exotic Metals; Tooling for Electronics; Numerical Control in Missile Production; Plastics in Tooling.

## MEET

 the men who make the wheels of Western industry go 'round.

What better opportunity to meet and exchange ideas with management, engineering, design, production and industrial sales people? And what could be more important, in today's highly competitive market, than to be informed and up-to-date on all the latest production developments?



## INSPECT

 some of the finest plants in the Los Angeles Area.

You'll see industry in action, too. Plant tours scheduled include: Byron Jackson Tool Co.; Douglas Aircraft Co.; Long Beach Naval Shipyard; Crown Zellerbach Corp.; Consolidated Electrodynamics; Hughes Products Div., Hughes Aircraft; United States Electrical Motors; American Can Co.; Mercury Div., Ford Motor Co.; Lever Bros. Co.; Northrop Aircraft Co.

... for more details, circle No. 6 on Reader Service Postcard

## WESTERN MEETINGS

**PLANT TOUR**—Members of the San Francisco section of the American Institute of Plant Engineers are pictured (at right) on a tour of the Enterprise Division of General Metals Corp. This is just one of the several tours scheduled by this group.



# Build SOUNDLY, DURABLY...

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Exterior use—interior use—Lebanex comes in the grade and quality required. Lebanex is tough Lebanite Hardboard bonded to both sides of a plywood core. Only waterproof glue is used throughout—will not delaminate under hot-pressing processes.

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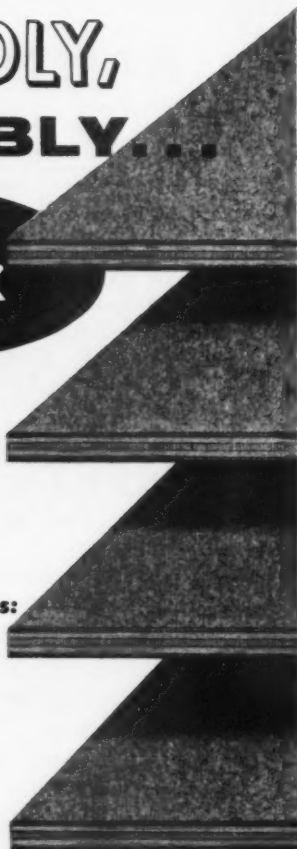
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Won't crack, blister or warp when exposed to heat—extremely mar-resistant.

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and Perfo-Square  
Cascades Lebanite Ridg Board  
Custom Parts to Specification

... for more details, circle No. 7 on Reader Service Postcard

**PACIFIC GENERAL MEETING** of the American Institute of Electrical Engineers, scheduled August 19-22 at the Hotel Senator, Sacramento, features sessions of interest to Western industry in general.

Talks include: **August 19** at 2 p. m.—Relays and Rotating Machinery; Computing Devices, Power Generation.

**Wednesday, August 20** at 9 a. m.—Industrial Power Systems; Nuclear and Radiation Instrumentation; Domestic and Commercial Applications. At 2 p. m.—Industrial Power Systems; Insulated Conductors; Space Heating.

**Thursday, August 21** at 9 a. m.—Feedback Control Systems; Management Research and System Engineering; Radio communication Systems. At 2 p. m.—Feedback Control Systems; Wire Communication Systems.

**Friday, August 22** at 9 a. m.—Substations; Transmission and Distribution.

Along with the technical sessions will be a full round of inspection trips and social activities. A registration desk will be set up at the Hotel Senator in Sacramento. Fee is \$5 for members; \$8 for non-members. Wives, children and students admitted free.

Further information may be obtained from AIEE headquarters, 33 West 39th St., New York 18, N. Y.

**TOOLING FOR THE SPACE AGE** will be the theme of the American Society of Tool Engineers Western Show and Conference set for Sept. 29-Oct. 3 at the Shrine Exposition Hall in Los Angeles.

Besides hundreds of exhibits, you can attend fifteen major conferences. Subjects include Tooling Space Airframes; Sandwich Construction for Aircraft; Forming the Exotic Metals; Tooling for Electronics; Numerical Control in

# SERVING ALL OF CALIFORNIA

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Nardon Manufacturing Co.,  
*Alhambra*  
Pacific-Southern Foundries, Inc.,  
*Bakersfield*  
Pioneer Diecasters, Inc., *Los Angeles*  
Rohr Aircraft, *Chula Vista*  
H. L. Whiting Co., *Los Angeles*  
Biner-Ellison, *Los Angeles*  
Pacific Steel Casting Company,  
*Berkeley*

*McDowell & Craig, Norwalk, chose  
12 COLT CO 2046 Clear-Opening  
Adjustable Louver Ventilators for  
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With the hot season here — COLT Ventilation keeps air moving freely, lowers inside temperatures, improves employee morale. Send for a COLT technician. He'll analyze your plant's ventilation problem and present written recommendations, without obligations.

**ECONOMICAL!** COLT natural Ventilation is always competitive with other quality lines, costs less to maintain, and often costs less to buy.

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**LIGHTER!** COLT Ventilators are seven times lighter than galvanized units giving comparable efficiency! No special bracing required!

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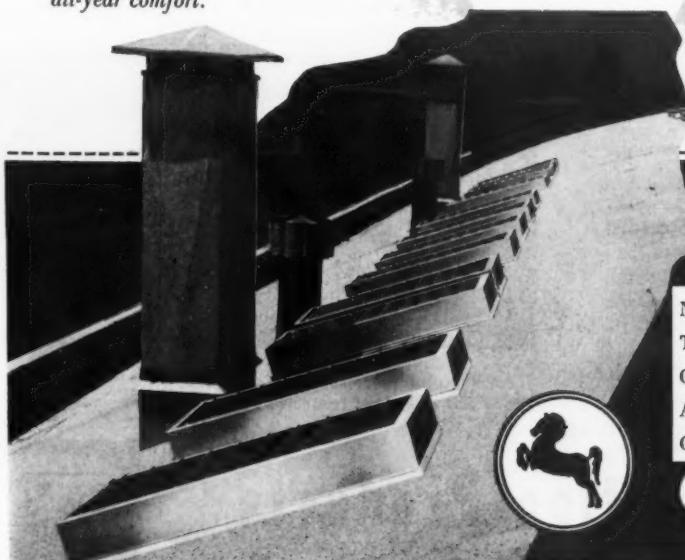
**FREE LITERATURE.** Yes — I'd like a copy, without obligation, of items checked.

- ☐ TECHNICAL MANUAL describing Colt System
- ☐ "Some Aspects of Fire Prevention in Industrial Buildings", by M. J. Reaney

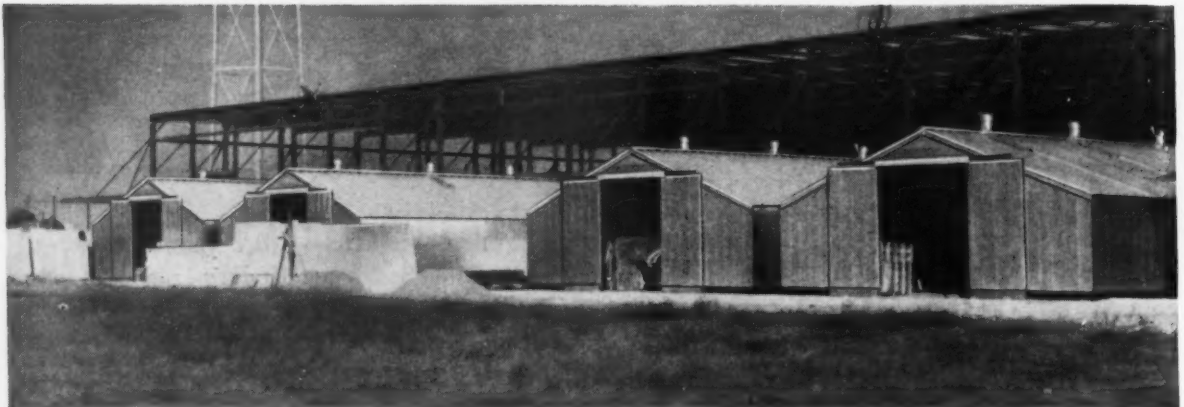
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Normandy 2-1181



# How a Contractor and a Manufacturer Saved Money with an Armco Steel Building



Four Armco Steel Utility Buildings, in foreground, provide shelter for textile machinery while the new Carlisle Finishing Company plant is being completed. Later, they were dismantled and moved to other cities for re-erection on permanent sites.

Consulting Engineer:  
**J. E. Serrine Company,**  
Greenville, South Carolina

When Carlisle Finishing Company, Carlisle, South Carolina, drew up plans for a new plant, the company and the building contractor made a novel agreement that saved money for both of them!

The contractor, Daniel Construction Company, Inc., of Greenville, South Carolina, put up an economical 70- x 140-foot Armco Steel Building for their use during construction of the main plant. After construction work was completed, the Armco Building was turned over to Carlisle, a division of Cone Mills Corporation, textile manufacturers of Greensboro, North Carolina. Now it's a permanent warehouse.

On the same project, company officials had the problem of storing textile machinery arriving before the plant was completed. As a solution, they erected four Armco Utility Buildings, each 36 by 48 feet, adjacent to the site for this purpose. After the new plant was completed, two of the buildings were dismantled, moved about 150 miles to Greensboro, North Carolina, and re-erected at the owner's White Oak Plant. The other two buildings were also dismantled and sent to the Greenville, South Carolina, plant to be used for storage.

In each case, an Armco Building provided shelter at the construction site and was later used as a permanent structure for another purpose.

\* \* \*

Armco Buildings, with their all-bolted construction that simplifies erection or re-erection, are one of the more than 30 Armco Drainage and Construction Products for industrial, municipal, highway and railway applications. Write for data.

## ARMCO DRAINAGE & METAL PRODUCTS, INC.

CALCO AND NORTH PACIFIC DIVISIONS

Berkeley • Los Angeles

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This Armco Steel Building was purchased by the Carlisle Finishing Company to serve as shop, office and equipment storage for the contractor. According to plan, it was later used as a warehouse by the owner.



These Armco Utility Buildings are shown here after being dismantled, moved 150 miles, and re-erected at another of the owner's plants.

# Armco Construction Products



... for more details, circle No. 9 on Reader Service Postcard

**WESTERN INDUSTRY — August 1958**





High maintenance costs got  
you up a tree?

See how you can protect hydraulic  
systems against failure with

# Shell Tellus Oil

THE MODERN LUBRICANT

Shell Tellus was especially developed to protect against *all* the major causes of hydraulic system failures: sludge and lacquer build-up, foaming and abrasive rust. It provides good film strength, and smooth, efficient hydraulic operation.

See from actual case histories how Shell Tellus can help you stop hydraulic system failures, save on maintenance costs. Call your Shell representative this week.



## SHELL TELLUS OIL

- ✓ special inhibitor eliminates lacquering and sludging resulting from oxidation
- ✓ foam inhibitor prevents oil loss due to foaming
- ✓ special agent stops rust
- ✓ superior demulsibility
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# correct to specs

Chemistry determination is one of more than 45 critical Quality Controls used during production of your order for **PACIFIC Mechanical and Pressure Tubing**—your assurance that it is **Correct to Specs!**

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Western Representative for Superior Tube Co.

## WESTERN MEETINGS

Missile Production; Plastics in Tooling.

Also, plant tours have been scheduled to leading industries in the area. You can get further information from the ASTE headquarters, 10700 Puritan Ave., Detroit 38, Mich.

**"PROBLEMS OF RETIREMENT"** will be the topic of the principal speaker, **Carl Hegeman**, vice president of industrial relations, Union Carbide Corp., at the fifth annual Pacific Northwest Industrial Health Conference Sept. 8 and 9 at the Multnomah Hotel in Portland, Ore.

The conference is concerned with the effects of industrial health on the economic stability of all industries and is specially designed for business executives, personnel directors, safety engineers, physicians, plant nurses, etc. Registration fee is \$10.

You can get further facts from the Portland Chamber of Commerce, 824 S. W. 5th Ave., Portland 4, Ore.

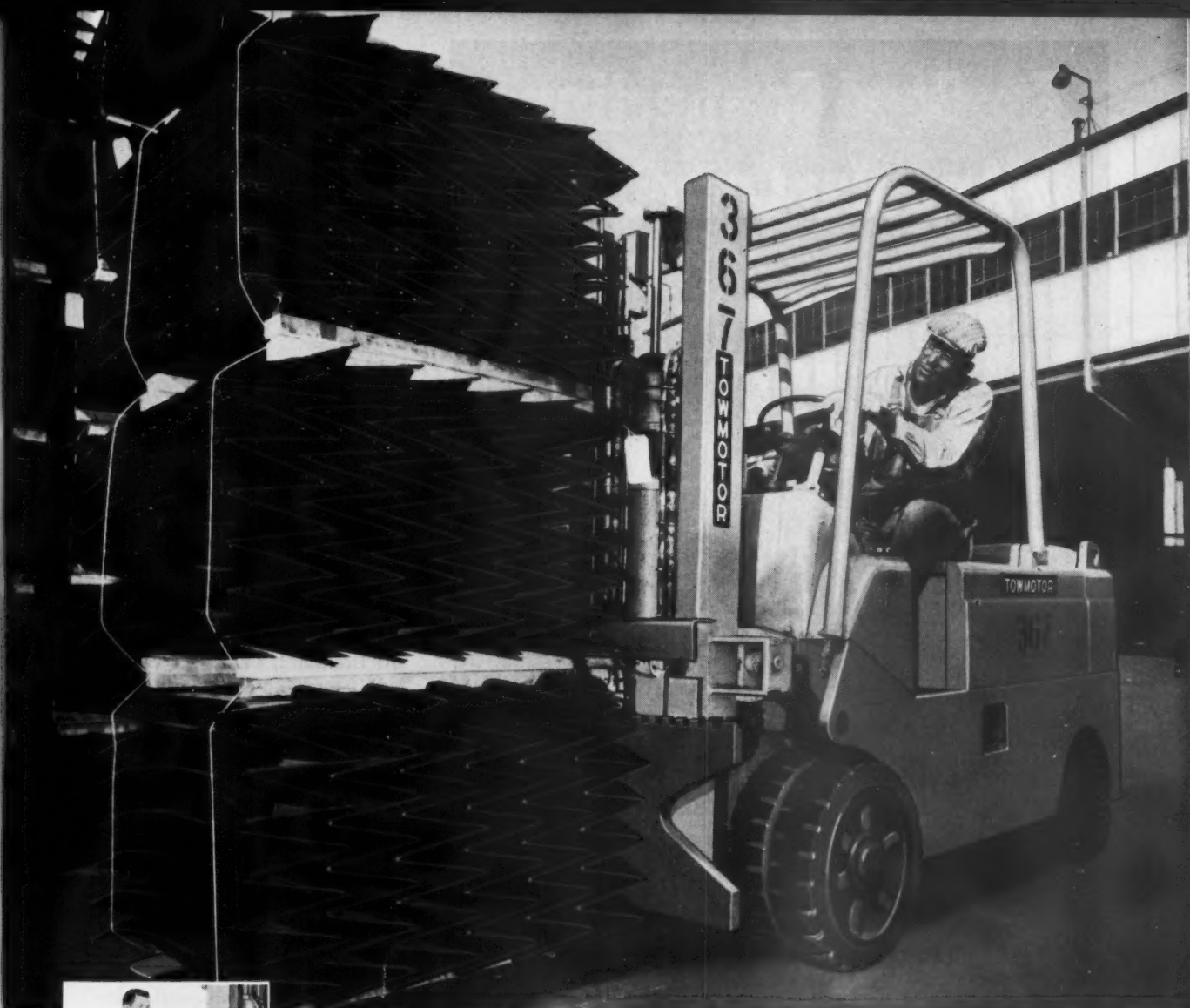
**THE ORANGE COUNTY** chapter of the Society for the Advancement of Management has elected **Robert Twombly** as its new president for 1958-59. Twombly, head of Robert Twombly Management Services of Los Angeles, succeeds **Joe Winkler** of Pacific Tile and Porcelain Co.

**A PRINTED RECORD** of all the material presented by the 12 speakers at the Western Material Handling Conference is available in booklet form from the Los Angeles chapter of the AMHS. Cost is \$5.

The twelve papers generally cover planning and space layout for material handling, warehousing and operational techniques, handling equipment selection and use, and receiving and shipping operations. Speakers, all Southern California authorities in their respective fields, represented various industries.

Speakers included, for example: **Robert Thomas**, vice president in charge of warehousing and transportation, Certified Grocers of Calif. Ltd.; **Jack Urban**, general

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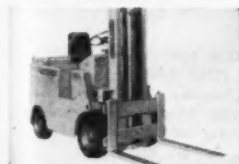
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ease! Operator "inches" gently up to tier—or skims over any terrain—with minimum effort. Saves extra maintenance dollars all the while.

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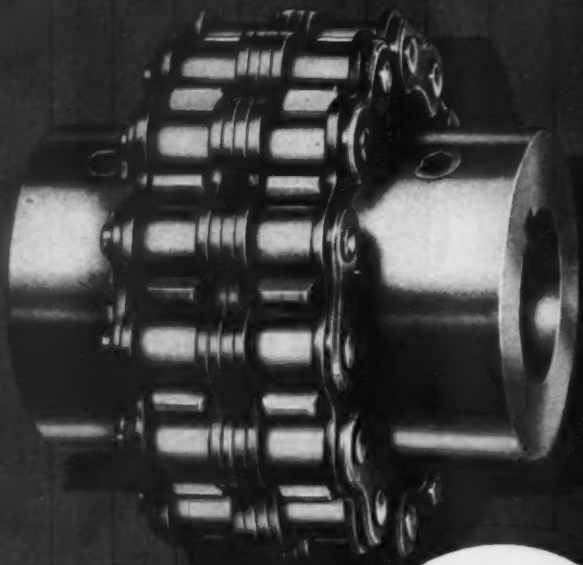
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# For Good Connections with Angular Corrections!



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**ROLLER CHAIN**  
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CULLMAN FLEXIBLE COUPLINGS are designed to correct angular misalignment between two shafts or in connecting a motor directly to a machine. They allow for dissimilar shaft diameters and some radial thrust. Furnished complete with keyways, setscrews and hardened teeth. Cullman couplings accommodate bore sizes from  $\frac{1}{8}$ " to 4" diameter. Off-the-shelf service on fractional to 500 horsepower power ratings.

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Complete Stocks Available At Our West Coast Warehouse  
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## WESTERN MEETINGS

manager, Los Angeles Cold Storage Co.; and **Robert G. Astle**, director of planning, McCulloch Motors Corp.

The transcript was recorded by secretary during the entire two-day conference, and thus includes all questions and answers following the presentations.

Orders should be sent, and checks made payable, to The American Material Handling Society, Los Angeles Chapter, 2807 Sunset Blvd., Los Angeles 26.

**NEW OFFICERS** of the San Diego chapter of the Society for the Advancement of Management include:

**C. L. Terrel**, Convair-San Diego, president; **Leland Pratt**, Kelco Co., vice president—program; **Al Breithard**, California Laundry and Linen Supply, vice president—membership; **Henry Ridgway**, The Marston Co., secretary; **Milton Fillius**, National Steel and Shipbuilding Corp., national director; **Frances Torbert**, San Diego College, director at large.

**THE SOUTHWEST SECTION** of the International Association of Electrical Inspectors, will hold its 35th annual meeting on Sept. 22-24 at the Disneyland Hotel in Anaheim, Calif. Members from chapters in Arizona, California, Nevada and Hawaii will attend this convention.

## Western Meetings

### You Should Attend

**Sept. 17-19—ROCKY MOUNTAIN MINERALS CONFERENCE**, American Institute of Mining, Metallurgical and Petroleum Engineers, Inc., Newhouse Hotel, Salt Lake City. For further information, contact organization headquarters, 29 W. 39th St., New York 18, N. Y.

**Sept. 19—FIFTH ANNUAL SAN FRANCISCO BAY AREA QUALITY CONTROL CONFERENCE**. Papers on all aspects of quality control by experts. To be held on campus of Stanford University, Palo Alto, Calif. For further information, contact the director of the conference: Grant Ireson, executive head of Stanford University Engineering Dept., Palo Alto, Calif.

**Sept. 29-Oct. 3—ASTE SEMI-ANNUAL MEETING and WESTERN TOOL SHOW**. Shrine Exposition Hall, Los Angeles. Theme will be "Tooling for the Space Age." Further details from American Society of Tool Engineers, 10700 Puritan Ave., Detroit 38, Mich.

**WESTERN INDUSTRY—August 1958**





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OFF THE FLOOR  
AND INTO  
YOUR POCKET**

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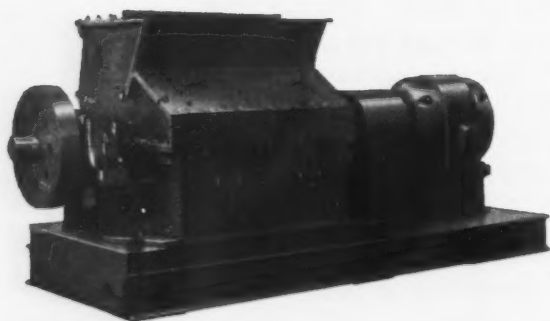
Twelve Pacific Coast Warehouses Providing Everything for Sanitation and Maintenance

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*Pope & Talbot, Inc. of Portland, Oregon,  
engineers these boards in strengths and sur-  
faces to meet rigid customer requirements.*



## **Sized by Jeffrey Shredders for Particle Board and Flakeboard**



**Jeffrey Type B-3 Wood Shredder**

Two Jeffrey Shredders are kept busy on this Pope & Talbot board production. One reduces Douglas fir shavings to sizes suitable for Particle Board, the other reduces thin wood flakes for Flakeboard. Both boards are solid and dense, permitting mortising, jointing and excellent laminating.

Jeffrey Shredders are able to handle the toughest reduction jobs, but require surprisingly little upkeep. They're efficient, reducing materials to desired sizes while producing a minimum of fines.

Jeffrey Shredders and Wood Hogs are described in Catalog 855A. For a copy, write The Jeffrey Manufacturing Company, 920 North Fourth Street, Columbus 16, Ohio.

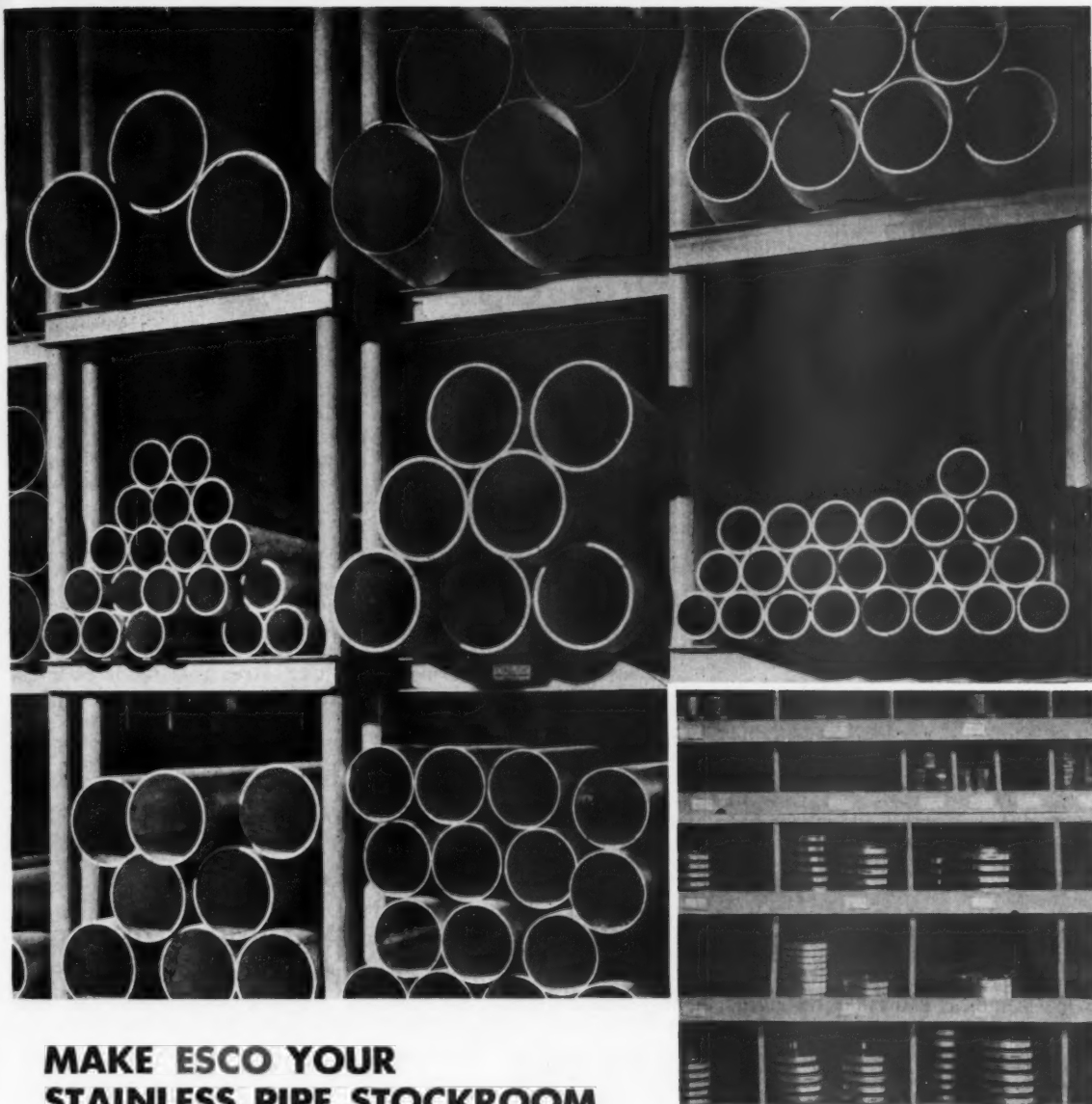
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**WESTERN INDUSTRY — August 1958**



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You can rely on *ESCO* to supply everything you need in stainless in the 300 and 400 series, "Hastelloy"\* Alloys, Carpenter 20, precipitation-hardening grades and plastics, too.

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... for more details, circle No. 17 on Reader Service Postcard

## Labor Notes for the West —

**STRIKE ACTIVITY IN CALIFORNIA IS DOWN.** During the first six months of 1958, according to Edward P. Park, California Director of Industrial Relations, it was considerably below that for the same period last year.

The 60 stoppages that began in the first part of 1958 involved about 12,000 California workers. Stoppages that began in the same period in 1957 involved more than 30,000 workers.

While these preliminary figures indicate a sharp decline, stoppages this year have tended to last longer, with an average of 27 calendar days, compared with 17 calendar days in 1957.

However, Los Angeles and Orange County are losing a lot of time through strike activity.

Nine strikes during April resulted in 19,654 man-days lost, according to the Merchants and Manufacturers Association. This compares with the previous month's total of 17,346 man-days lost because of eight strikes.

**EMPLOYMENT IN IDAHO IS UP.** Increased agricultural activities accounted for a major portion of the increase, but a number of basic industries also made gains.

Eight of eleven selected Idaho industry groups reported the average weekly earnings of their workers to be higher than a year ago. Three groups—mining, utilities, and hotels—reported lower earnings because of a shorter work week.

Unemployment in Idaho declined rapidly during May but continued to be a little higher than is usual for this time of year. Covered unemployment rate was 3.7% in mid-May compared to the national average of 7.2%.

**FILMS ON SPACE TECHNOLOGY** are now available in a 16mm. series from the Dept. of Visual Communication, University of California Extension, Los Angeles 24.

The Space Technology series presents a sound and imaginative exposition of the fundamental principles of very long-range ballistic missiles, with topics ranging from flight dynamics, system design and interplanetary operations to rocket propulsion, guidance systems, and space medicine.

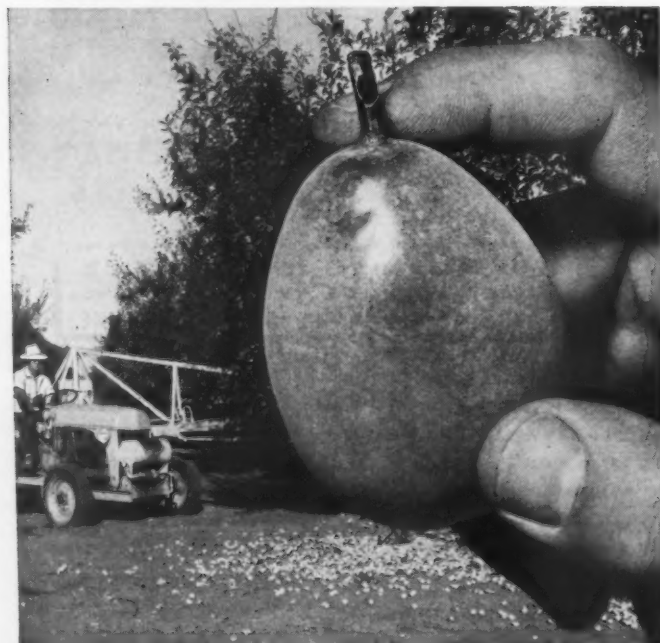
The complete series runs for approximately 42 hrs., divided into 17 programs. Each 2½-hr. program may be retained for four days and be shown as frequently as required during that time, with lecture notes supplied by the university.

**INDUSTRIAL RELATIONS CERTIFICATE PROGRAM**, for people active in the field of labor relations and personnel management or who wish to prepare themselves in this field, will be given this Fall by the University extension, University of California (Northern Area.) Candidates must complete a minimum of eight courses with a minimum grade of C to gain the certificate. For counseling and information regarding registration and fees, call the Institute of Industrial Relations, ASHberry 3-4642 or ASHberry 3-6000, Ext. 8571.

*How Long Distance makes money and saves money for business*

## Fruit firm picks off \$22-million plum by telephone

report Joe Marguleas and Frank Heggblade, of Heggblade-Marguleas, San Francisco, shippers of fruits from California



"Most all our selling is by phone," says Mr. Marguleas. "It's the only way we can stay in fast, personal touch with our 350 customers across the U.S. and in Canada. In a business of highly perishable products and volatile prices, Long Distance moved 7,600 shipments (worth \$22 million) for our growers last year."

Long Distance can let you read a buyer's mood in seconds, nail down a crucial appointment, hold conferences across a continent. Ask our business office to have a Service Engineer show you *all* the ways Long Distance can do a money-making job for you.

### Typical low Long Distance daytime rates

From	To	First 3 Minutes	Add'l. Minutes
Tacoma—Washington, D. C. . . . .		\$2.50	.65
San Diego—Kansas City . . . . .		\$2.05	.55
Eugene—Denver . . . . .		\$1.70	.45
Sacramento—Boise . . . . .		\$1.20	.30

(Weekday, station-to-station rates, excluding tax.)



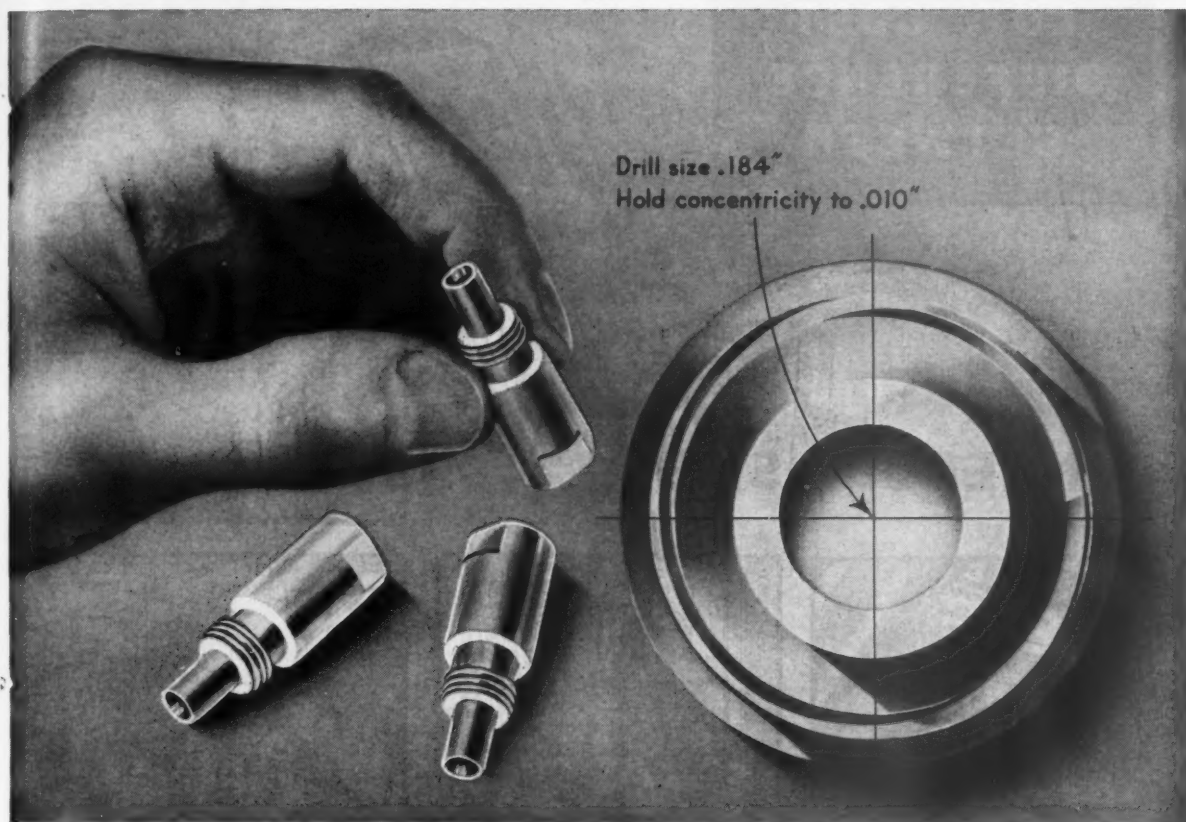
## Pacific Telephone

... for more details, circle No. 18 on Reader Service Postcard

**WESTERN INDUSTRY—August 1958**



## How Anaconda can help you get the exact Rod to fit the job



**T**HE broad line of Anaconda free-cutting copper and copper-alloy rods gives you widest latitude in selecting from warehouse stock the precise rod for most screw machine jobs. But every once in a while there are special requirements.

**One company's problem:** The M. J. Grass Screw Machine Products Co., Buffalo, N. Y., machines a part for a gas-burner base from  $\frac{1}{2}$ " round free-cutting brass rod. Specifications call for a hole  $1\frac{1}{16}$ " deep by .184" in diameter—with concentricity held to .010".

With standard free-cutting brass rod the drill had a tendency to wander, running the concentricity off as much as .024". To correct this, The American Brass Company provided rod stock with a minor variation in fabrication for deep drilling. This free-cutting brass rod has a slightly harder core than the ordinary rod, which minimizes the tendency of the drill to run off center at the high drilling speeds used. Now M. J. Grass holds the concentricity to .008" or under. With regular free-cutting brass rod, rejects ran as high as 15 per cent. With the deep-drilling rod, however, there are no rejects.

**Your requirements:** Anaconda Rods are consistently uniform in composition, temper, and free-cutting characteristics. Consequently, they make possible easy duplication of cutting speeds and feeds known to be satisfactory from previous job records.

When you need special physical characteristics, such as a harder core for deep drilling or additional ductility to permit spinning or cold forming after machining, either the temper, the alloy, or both can be adjusted to meet your requirements.

**Free technical service:** It is the function of the Technical Department of The American Brass Company to assist metal users in the solution of special problems. This service is at your disposal without charge.

Comprehensive data on composition and machinability of standard Anaconda Alloys, standard specifications, weights, and dimensions of standard rods is available in Publication B-3. For this booklet—for special technical assistance—write: The American Brass Company, 14900 Garfield Avenue, Paramount, Cal. In Canada: Anaconda American Brass Ltd., New Toronto, Ont.

5770 Rev. PC

**ANACONDA® RODS** FOR SCREW MACHINE PRODUCTS  
MADE BY THE AMERICAN BRASS COMPANY

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**LOW COST  
DIFFERENCE  
BETWEEN**

**DANGEROUS SLIP**



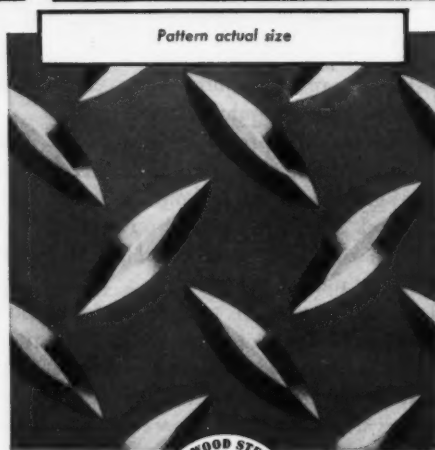
## SAFE STEP

Eliminate high-cost accidents with low-cost A.W. Super-Diamond. A.W. Super-Diamond safety floor plate replaces DANGER with SAFETY wherever hazardous slipping conditions occur. Here's why!

- Raised steel, diamond-shaped figures give *maximum slip-skid resistance from all angles of approach.*
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- Non-directional pattern—no matching problems—minimum waste.
- Easily fabricated for quick installation.
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Get complete . . . free . . . information that may save you thousands! Write today on your company letterhead to Dept. SD-E12.

Pattern actual size



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**SUPER-DIAMOND**  
**ROLLED STEEL FLOOR PLATE**

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Wherever oil, grease, or other substances raise special slipping accident hazards, we suggest a check on the special non-slip qualities of A.W. ALGRIP—the world's only abrasive rolled steel floor plate.

Other Products: A.W. ALGRIP Abrasive Rolled Steel Floor Plate—Plates—Hot and Cold Rolled Sheet and Strip—(Alloy and Special Grades)

. . . for more details, circle No. 20 on Reader Service Postcard

**WESTERN INDUSTRY — August 1958**

You can . . .

## BEAT COMPETITION

by tapping employee ideas

## through WORK SIMPLIFICATION

August  
1958



Vol. XXIII  
No. 8

**Y**OUR EMPLOYEES can do a lot more for you than producing your product. They can be your best source of time and money saving ideas.

Beckman Instruments, Inc., knows what we're talking about. It's saving thousands of dollars a year by tapping its employees' ideas. And not through the "suggestion box" deal.

It's by a method called Work Simplification. Nothing mysterious about it . . . except why isn't it being used in your plant. We'll explain how to go about setting up a program in your plant, but for now let's take an example from Beckman's case book to show Work Simplification (WS) is saving time and money.

A WS team (three persons) at Beckman's Berkeley Division tackled the job of improving a slotting operation on a base plug.

The job was hazardous (the operator risked cutting his fingers) and potentially unhealthy (breathing phenolic dust).

Talking with the operator and getting his full cooperation (an important factor in WS) the group made a Flow Process Chart of the operation.

From the chart they analyzed steps to point out weak spots. At first the team thought to improve sawing. But a closer scrutiny (using basic WS techniques) pointed to the possibility: **why not eliminate sawing entirely!**

Again, using WS techniques,

the team (with the operator's enthusiastic support) sketched out a modification of the original die that would punch a slot in the cover of the unit—doing away with the necessity of sawing the base plug.

Cost of modification: \$65. Annual savings on operation: over \$3,000.

Ideas like this are just part of the thousands of dollars' worth of ideas that Beckman is realizing through its Work Simplification program. And it can make money for you, too.

What is Work Simplification and how can it work for you?

Basically, the program follows much the same line laid down by **Allan H. Mogenson** back in the 1930's.

Work Simplification is based on the premise that there's always a better way of doing any job . . . and that way can be found through **group** employee participation at all levels (not individual participation as in the suggestion box plan).

Beckman started its WS program back in 1956, recognizing the fact that survival of many electronic companies depended on streamlining operations—and getting the full cooperation of employees to work toward this efficiency goal.

Beckman assigned the task of setting up its WS program to **Jack Hart**, a member of the employee relations staff with a good back-

ground in work simplification techniques. Both qualifications are handy in setting up a good WS program.

Here's how WS got underway at Beckman's Berkeley division.

First step was to explain the program thoroughly to **Tom Scatchard**, manufacturing manager. "You must first gain the acceptance of management personnel so they will be in full accord with your plans," states Jack.

No need to worry about that at the Berkeley division. Tom Scatchard is one of the most enthusiastic backers of WS in the West . . . and his staff works right with him in making this program a success in his plant.

Now to setting up the program.

Appropriately, the first stage deals with human relations and psychology. Just as WS people must employ good human relations to carry out a program successfully, so must the instructor use it in teaching WS.

Jack explains it this way: "When we introduce trainees to WS, we use sound psychological training methods. When trainees come into the class room for the first time, they sit at desks bearing their name plates. Also, they are given WS notebooks with their names stenciled on them. These materials are designed to convey a sense of participation in an important program which has solid company backing."



## WS case studies

Work simplification studies produced a new jig assembly which streamlined the spot-welding of tiny soil moisture detector units at Beckman Instruments' Berkeley Division. Assembly previously involved taping of metal covers around inner wafer, and hand holding of "sandwich" for spot welding operation.

Solution to this problem was a new jig which holds work pieces together with a spring clip, thereby eliminating the need for tape, and also accurately positions the "sandwich" in each of five spot-welding positions for a neater, cleaner, welding job. After \$85 tooling and installation cost, this assembly operation improvement saves Beckman/Berkeley nearly \$300 a year in labor and material, results in higher quality spot welding.

Reducing the number of twisting operations to secure wire leads on an electronic counting unit cut assembly time by 40 per cent and minimized an otherwise fatiguing job for Beckman Instruments' Berkeley Division.

The improvement, inspired by a work simplification program, substitutes one twist for six before soldering operation, reduces the total number of twists from 78 to 13 for a single "Craigmount" unit. Gross annual labor savings come to more than \$800.

Work simplification scrutiny of an electronic counting package generated an engineering modification which will save Beckman Instruments' Berkeley Division better than \$1,500 in time and material on units produced at the rate of 42,000 per year.

Examination of the package revealed that two wires were being used to do the job of one. The new method eliminated the bare wire-insulated wire combination, substituted the longer insulated wire to make the required lug connections in much cleaner, neater fashion. Simplicity of new method eliminates pre-form operation, storage and inventory control, saves material.

## "Use group participation . . ."

Classes consist of about 30 lead people (foremen, supervisors, etc.) who meet for 16 hours of instruction. After each member of the class introduces himself, the instructor starts out with the peg board exercise. He asks (or appoints) a volunteer to put the pegs into the board as quickly as possible. Someone else times the volunteer. (An important note here—"instruction" consists mainly of having the group participate in all phases so everyone learns by doing.)

The peg board volunteer usually reacts enthusiastically (but not too successfully) to the task. The instructor thanks him and—to inject a little humor and put the class at ease—tosses the volunteer a candy bar as a prize for his efforts.

Other class members suggest ways to put the pegs into the board. The instructor does not censure or suggest improvements, but rather, he guides the class to discover the best way to do the operation: a rhythmic procedure of picking up one peg in each hand and putting them in the holes simultaneously.

Next the instructor takes up key human problems generated by work simplification: **resistance to change and resentment of criticism.**

To illustrate these problems, a skit is used featuring class members in the roles of Gloria and Fred. Fred (a new office supervisor) is trying to install a new filing system. Gloria (a veteran file clerk) devised the old system that needs changing.

What does Fred do?

Tell Gloria her method is no good and that she had better do it his way?

Sell Gloria on the idea that there's a better way and that it

would be best to install the new program?

Or **consult** with Gloria on a better way of achieving the goal and work together towards the solution?

Beckman has discovered that the last method is best. This is the "Consult 'Em" approach to Work Simplification—it's designed to enlist the support of all levels of employees by assigning them a role in the introduction of a method improvement.

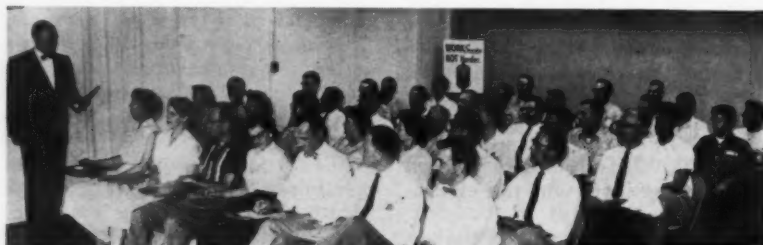
Step II in the training program is to introduce the economic justification for Work Simplification. Employees are told of the competitive advantages which stem from cost reduction. One question invariably pops up: "Will Work Simplification eliminate jobs?" The answer: "Increased efficiency leads to lower production costs and lower sales prices. This in turn makes for more sales which create a demand for more production and hence result in MORE JOBS." Of course, you should advise that there might be relocation resulting from WS methods . . . but a point to stress is that **no person will lose his or her job through Work Simplification!**

After economics comes the technical or engineering phase of WS. At this stage it is pointed out that the role of the industrial engineer in the plant is actually enhanced through WS techniques. He becomes the consultant and coordinator of the programs.

The WS technical or engineering steps consist of:

- (1) Picking a job for improvement . . .
- (2) Gathering the facts . . .
- (3) Challenging each detail . . .
- (4) Developing the improved method . . .
- (5) Installing the improved method . . .

**WS TRAINING**—About 30 lead people (foremen, supervisors, etc.) participate in WS classes at a time. Training requires approximately 16 hours.





## ... and the Consult 'Em approach"

Let's examine each step in detail:

**Picking the job**—The WS groups are divided into units of three. Persons are picked to balance each group (personality, drive, background, etc.). The group then selects a job to improve, looking for these factors: high cost, operator fatigue, safety hazards, high production volume, etc. Jobs are then submitted to a WS executive committee for approval and the "go ahead." At Beckman/Berkeley this executive group consists of: **Tom Scatchard**, manufacturing manager; **Dick Chappelle**, chief manufacturing engineer; **Al Laven**, chief tool engineer; **Henry Kaider**, manager of assembly; **Laurel Richey**, sales coordinator; **Jean Carlomagno**, manager of fabrication.

**Getting the facts**—Here the fundamental WS tool is introduced—the flow process chart. This chart lists the step-by-step procedure of the job, including: operation, transportation, delays, storage, inspection, etc.

**Challenging each detail**—Students are taught to "WHY the hell out of everything." What is going on and Why... When and Why... Where and Why... Who and Why... How and Why... The instructor stresses the application of good engineering and professional techniques in solving the problem. This emphasizes the value of the work to over-all company production operations.

**Developing the improved method**—Now the WS group is asked to examine all possibilities for improvement of a job. Each step is analyzed to see if it can be improved, combined, or eliminated. Students employ the principles of motion economy (two hands instead of one... circular work

place... gravity flow of parts, proper work rhythm, etc.)

**Installing the improved method**—This involves selling the new method. It takes thoroughly documented work place layouts, flow charts, cost reduction analyses, process descriptions. The operator has to be convinced. The three-man WS team presents these aspects of the project to the rest of the WS trainees. The class then turns thumbs up or down on the project... or suggests further refinements. Then the project is put into effect.

What do the employees get out of this? Tom Scatchard puts it this way: "The employee gains the satisfaction of creating something that is contributing to his own security. It's one of the greatest feelings he can get out of his work." And the fact that many of the projects are worked out on the employees' own time indicates their interest in WS.

Other rewards come in the form of a banquet at which desk pens, wallets and key chains (with the Green Light symbol) are presented. A WS boy and girl of the year are chosen by the WS participants for special awards.

Will WS work in your plant? YES.

Just give your employees the Green Light to develop ideas, some time during the work week to work on projects (you'll find the work time well spent... and the employees will even put in much of their own time), and the basic techniques outlined in this article. There are several books available on Work Simplification to help you set up a program in your own plant. If you have any questions or want further information, just drop us a line. We'll try to get the answers for you.

**WS EXECUTIVE GROUP**—At Beckman/Berkeley consists of (l. to r.): Tom Scatchard, Jean Carlomagno, Henry Kaider, Laurel Richey, Olaf Landeck, Dick Chappelle and Al Laven.



## WS at work...



**CONFERENCE**—Jack Hart (left), Beckman Work Simplification instructor, and Tom Scatchard, Beckman/Berkeley manufacturing manager, discuss advantages of problem solved by Work Simplification.



**TEAMWORK**—A WS group at Beckman/Berkeley consults with an operator on the best way of solving a problem. The solution in this case nets over \$3,000 annually.

**ADVANTAGES**—Robert Ward, Beckman Division Manager, states: "We look on WS as one of our most important ways of meeting increasing competition in our industry."



# Latest tips on electrical maintenance

*Check these helpful hints thrashed out at a meeting of a Western chapter of the American Institute of Plant Engineers . . .*

**T**HE WEST is packed with power, and where there's power there's industry. That's why electrical equipment's about as important to you as breathing—ignore it and you're dead.

At a recent meeting of a Western chapter of the American Institute of Plant Engineers, maintenance of electrical equipment was the table topic.

It was agreed that one of the best sources of maintenance information is the manufacturers themselves. They specialize in determining the characteristics of their own products and go to the trouble of issuing operating and maintenance instructions. Paying attention to what they say can mean the beginning of effective maintenance in your plant.

What equipment should an inspector have available in checking a piece of electrical equipment?

One manufacturer suggests a good basic kit would be: extension lines and flashlights . . . tools for disassembling apparatus . . . air-gap gages, spirit level . . . inside and outside micrometers . . . testing indicator . . . megger or ohmmeter . . . electrical instruments, thermometers and a magnifying glass.

The last item may seem exaggerated, but you'll find there are many times when a magnified look at a contact will reveal an expensive source of trouble.

Where transformers and oil circuit breakers are involved, a portable oil testing set should be included in the set. And don't forget the manufacturer's instruction book. A dentist doesn't drill every tooth until he finds decay—he knows what's to be done before he does it.

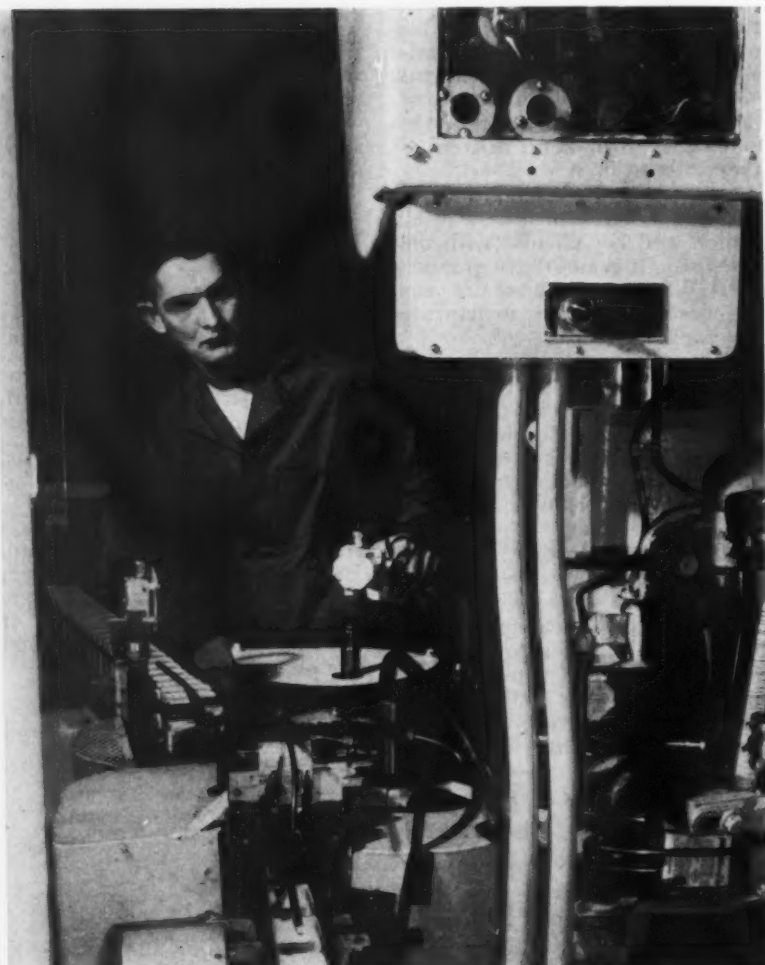
Inspection data should be recorded. An inspection card on equipment means that anybody can tell immediately what the history of the machine has been. Use figures or symbols if you like, but make sure there's a key to provide understanding to the next inspector who'll take over your job when you get promoted.

Clean apparatus will give longest service.

Protect your electrical equipment against dirt, moisture, oils, acid, alkalis, chemical compounds etc., and remember that the American Institute of Electrical Engineers says that the insulation resistance of stator windings and armatures of clean, dry machines at 75 deg. C. should not be less than the formula:

$$\begin{array}{l} \text{Insulation} \\ \text{resistance} \\ \text{in} \\ \text{megohms} \end{array} = \frac{\text{Rated voltage of machine}}{\text{Rated in Kv-a.} + 1000} \times 100$$

The minimum insulation resistance of the field should be of the order of one-half to one megohm, depending on the size of the machine. Insurance companies demand an insulation resistance of one megohm per 1,000 volts oper-



**TENSE CONCENTRATION** is apparent on the face of this operator as he keeps a visual check on the many electrical parts of his machine which, without proper maintenance, could spark costly production delays. Breakdowns can be prevented if the operator gives early warning of unusual vibrations, misalignments or noises that might indicate danger.

ating voltage, with a minimum of one megohm.

Insulation resistance measurements should be made from time to time. Use a megger or an ohmmeter, and where a 500-volt direct current is available, a high-resistance voltmeter will give satisfactory results.

High temperatures often shorten the life of electrical apparatus. Some people are inclined to forget that it's the total temperature, and not the temperature rise that should be the measure of safe operation.

A low temperature rise with a very high ambient may result in rapid deterioration of insulation. And remember that when either the windings or the bearings of a machine not specially designed for high temperature service attain temperatures in excess of 90 deg. C. the operating condition should be investigated.

Although it's the practice of electrical manufacturing companies to grade apparatus in degrees Centigrade, many operating companies use Fahrenheit thermometers. By applying the usual conversion formulae: Degrees Fahrenheit =  $9/5$  (degrees Cent.) + 32 and Degrees Centigrade =  $5/9$  (degrees Fahr.) - 32, conversion can easily be made.

Voltage checks are important, too. Unbalanced voltage may seriously affect the operation, and single-phase operation is almost certain to result in damage to polyphase motors. Voltage readings taken at the terminals of a three-phase motor which will not start may be misleading, for even if one line is open at the transformer or starter, voltage will be indicated between all three lines at the motor if another three-phase motor has continued to run single-phase on the same circuit.

In the same way, proper care of brushes, brush rigging and current collector parts is a fundamental necessity.

Check the following points: brushes should be accurately adjusted and fitted to the commutator or collector rings . . . take care to see that dirt, or broken edges of one brush have not lodged between a brush and the surface of the commutator or collector ring . . . brushes should move freely, but not be so loose that cramping will occur when the machine is operated . . . check the spring tension . . . the collector rings should

be smooth and true . . . the brushes must be correctly aligned and the commutator brushes properly staggered, pairs of arms being set out (plus and minus) and in alternately.

Don't fall into the trap of thinking of failure in electrical equipment solely as electrical or insulation troubles—they may be strictly mechanical.

An unusual noise may be caused by vibration due to: unbalanced or bent shaft . . . obstruction of the ventilating system . . . loose parts . . . faulty alignment . . . system disturbance, or any other abnormal condition. No simple device is available for locating the source of such problems. It will depend on the skill and experience of the inspector.

Some of them have been at electrical maintenance long enough to almost sense the trouble. L. G. "Les" Noe has been in maintenance work for 18 years, and most of this time he's been working on electrical equipment.

"Most of my headaches come from contacts and controllers," Les said. "To keep them in trim I have to check them at least once a month," he added. "On our Ipsen automatic heat-treat furnaces," he continued, "we have to check the thermocouple every 8 working days. They tend to deteriorate due to gases and heat and often need replacing.

Sometimes maintenance is as simple as noting the oil level on

. . . continued on p. 68



**CHIEF INDUSTRIAL ENGINEER** Milt. Laursen says: "... some electric motors are better left running than taken out to be checked. It's cheaper, too."



**MECHANICAL LEADERMAN** Ike Nunnally adds: "... dirty contacts give me headaches."



**ELECTRICAL MAINTENANCE** man Les Noe warns: "... regularly check controls."





## Airplanes—the new Western equalizer

*Many small firms now have the jump on bigger fellows by taking to the air to meet production and delivery schedules . . .*

**T**HE WESTERN "equalizer"—once the six gun—has been replaced by the company owned airplane.

Yes, besides shrinking our wide open spaces, the airplane has enabled many small and medium sized Western plants to outpace the bigger fellows. Listen to what some Western plant managers and owners have to say:

"By traveling three airlines and one railroad, I can reach one of my company's remote plants in 1½ days," says **Charles E. Walters**, president of the Spokane Concrete Pipe Co., Spokane, Wash. "By company plane, it's only four hours and fifty minutes."

This sums up the reason Spokane Concrete Pipe and hundreds of other Western manufacturers, both large and small, have embraced flying in recent years.

The great expanses of the West, coupled with the need for fast executive transportation in competitive manufacturing, form a natural setting for plane use.

In fact, one Western state, California, leads the country in number of aircraft registered—7,420.

There are 7,419 aircraft located in the ten other Western states\*.

Walters' firm, a 40-year-old company whose products are used mostly for sewers, airport drainage, highway construction and irrigation, has other plants in Walla Walla, Wash.; Great Falls, Missoula and Butte, Montana; Alaska and Canada.

With 300 employees scattered at these locations, Walters has found an eight-place Beechcraft Super 18 plane indispensable for keeping personal contact. He also uses the plane for sales work and for keeping contact with national organizations.

With the plane, Walters can leave Spokane in the morning, inspect all three Montana operations and be back in Spokane for dinner that night. Otherwise, it's an all-day drive or an all-night train ride to reach only one of the Montana plants.

The time-saving factor of business aircraft also is the reason Pa-

cific Automation Products, Inc., of Glendale, Calif., uses both a single-engine, four-place Bonanza and a twin-engine, six-place Twin-Bonanza.

As a designer, manufacturer and installer of electronic cable, control systems and instrumentation systems for missile launching sites, PAPI is a supplier to the major missile producers of the United States.

"Our planes have enabled us to establish a reputation for quick service," says **Arthur P. Jacob**, executive vice president of the firm, which is also engaged in industrial automation. Last year, their planes were in the air over 1,100 hours, with pilots **Ray Cote** and **Joe Pryzbylo** at the controls.

"A call can come in requesting some of our personnel for a conference and within a matter of minutes they can be winging their way to a customer plant," points out Jacob. "This amazes our customers that we are able to talk to them on the phone and volunteer that an engineer will be at their plant in a couple of hours, despite the fact that there are two or three

\*Arizona, 825; California, 7,420; Colorado, 907; Idaho, 646; Montana, 917; Nevada, 287; New Mexico, 548; Oregon, 1,286; Utah, 365; and Washington, 1,638.



hundred miles separating us at the time."

The Ace Drill Bushing Co. of Los Angeles uses a company plane for "door-to-door" business. The doors are those of 22 major airframe manufacturers scattered across the country. By scheduled airliners, it takes seven weeks to make the circuit. By company plane, the firm has found this circuit can be made twice in only four weeks.

"Doubling contacts in little more than half the time gives further emphasis to our slogan, 'Ace Sets the Pace'," says **Don Cox**, flying sales representative who flew in World War II. Many other flying executives learned to fly in the service; others have taken up flying solely to use in their work. Sometimes, the lessons are a part of the purchase agreement of a new plane. Professional pilots are hired by most companies flying large transports.

Another Western manufacturer using aircraft to live up to a slogan is the John J. Foster Manufacturing Co. of Santa Ana, Calif. Its slogan: "Fire Department Service."

The company manufactures aircraft cushioning and accoustical thermal insulation products which are sold nationwide. **John J. Foster**, president and sales manager, says, "Our two planes get us to and from our customers and contacts faster than do the airlines . . . they help put real meaning in our slogan."

**George Barnes**, Foster plant manager, says, "The plane expands my working week and allows me to handle business which otherwise would be almost impossible to accomplish on schedule."

Airframe manufacturers themselves have been quick to adapt business aircraft to their own needs. Lockheed Aircraft Corp. of Burbank, Calif., flies three of the twin-engine, six-place planes and one twin-engine, eight-place aircraft.

Lockheed's business planes are used as air taxis, executive transports and light cargo carriers and commute between the Burbank plant and other Lockheed facilities and military installations in California.

Convair, Hughes and Northrop are other Western aircraft manufacturers utilizing business aircraft. McCulloch Motors of Los Angeles, builders of engines pow-

ering several pilotless aircraft today, finds much use for a piloted aircraft.

Another aircraft supplier, C & H Supply Co., Seattle, Wash., and Inglewood, Calif., uses a plane for executive transportation and for customer relations as well. C & H, which manufactures aluminum decals used by the aircraft industry and many others, picks up customers at their home airports in C & H's luxurious aircraft and flies them to the port where C & H keeps a ship for deep sea fishing. The plane is a flying showcase of C & H decals.

Customer relations are important, also, to the Shepherd Machinery Co. of Los Angeles, Santa Ana, San Diego and Lancaster, Calif., which sells and services Caterpillar equipment and manufactures attachments for the Caterpillar line. Three aircraft always are on call to answer customer requests as well as provide transportation for **W. W. Shepherd**, manager, and other executives.

Business planes range from single-engine, four-place planes costing under \$10,000 to twin-engine,

eight-place executive transports costing nearly \$120,000. Most are built by Beech, Cessna and Piper aircraft companies. Leasing and finance plans let the owners pay as they fly. Tax savings will normally return more than half the investment.

The names of leading Western manufacturers dot the lists of business plane owners. Far greater in number on the lists of owners-users are the names of unknown firms becoming known. Often times, a plane is more important to a small or middle-size firm because time and mobility generally mean the difference between success and failure.

Since 1946, hours flown by business planes have soared five-fold. And according to all current surveys, business aviation will continue to expand rapidly—with 38,000 planes forecast for 1964 and 60,000 for 1975 in the West.

Western manufacturers, many with over a decade of aircraft utilization, see the day coming when an airplane will be vital part of every manufacturer's equipment.



**WORKHORSE**—This D-50 twin Bonanza in use at Motorola, Inc., Phoenix, Ariz., last year lapped the world four times in mileage. It's used by Motorola engineering and production personnel in meeting production, delivery and installation schedules throughout the West. Pictured (left to right) are: **Pilot Jim Parkhill**; **J. Paul Jones**, assistant manager, Western military electronics center; and **Robert W. Berton**, manager of military electronic marketing. Berton states: "The benefits of operating our own aircraft include time and money saved by establishing one's own schedule . . . ability to freight component parts to meet production schedules . . . and a tremendous contribution to our morale."

**M**OVING INTO A NEW plant can be a once-in-a-lifetime opportunity. Or it can be a massive headache.

You have the chance to improve operations all along the line and to set your sights for the future.

But, you run the risk of making the move as hard as assembling a jigsaw puzzle blindfolded.

The industrial engineering department at Marchant Calculators Division of Smith-Corona Marchant Inc., Oakland, Calif., faced both opportunity and headache in Marchant's recent move into a new 500,000 sq. ft. plant. The move was from two old plants—the manufacturing one, which was one mile from the new building . . . and the assembly plant which occupied a rear portion of the new plant site.

Both moves presented problems. Each move had to coordinate with plant vacation shutdown. Each move had to be made so there was no interruption in production. And each move entailed thousands of different parts and equipment.

Tough problems. But not too bad if you have these essential ingredients:

**(1) Careful planning and scheduling so that—at least in theory—every move is plotted exactly . . .**

**(2) Good material handling equipment and moving crews that are flexible enough to move all equipment regardless of weight, volume or specialized nature.**

The move was under the overall direction of **Milt Laursen**, chief of the industrial engineering department. Let **Jerry Yonke**, one of the Marchant engineers in charge of the move, explain some of the problems faced and how they were solved . . .

"Our first problem was locating and combining two separate operations—manufacturing and assembly. We spent many an hour over layout sheets moving around three dimensional models of equipment before we figured out a good arrangement of equipment. But we feel that we have achieved a pretty good work flow. We also feel by using templates of equipment and layout models to exact scale we solved—on paper—many problems that could come up later on.

"We might add that this planning took place way before ground was broken (in the summer of

1956) so the building conformed to the wishes of Marchant engineering and production people.

"Next was to draw up a plan of who would do what and when. For instance, the equipment in the old plant was connected up with 208-v., three-phase and 220-v., single phase. Equipment we wanted to run on 440-v. in the new plant had to be ready prior to the move so the electrical conversion and connection might be simple and quick. Our only solution was to make the equipment dual voltage (220/440) so that equipment might operate in the old plant and also be ready for the new one.

"The majority of our equipment had dual voltage as we had looked towards using 440-v. for many years. Those motors that were not dual voltage were replaced with new totally enclosed fan cooled motors, ball bearing in the case of the fractional horsepower motors, or rewound or reconnected in the case of larger motors.

"Our maintenance crew did most of the rewinding and changing overload heaters and solenoid coils to prepare for 440-v., during vacation shutdown prior to moving. When the equipment arrived in the new plant it was ready for 440 v. by the simplest connection."

By planning ahead, Marchant engineers—working with the **D. W. Nicholson Corp.** (movers) and the **California Electric Co.** (electrical installation)—were able to determine what manpower and equipment would be needed long before any physical moves would take place.

Next came pre-installation. Marchant engineers planned it so everything would be ready for immediate connection after a piece of machinery was set in place. Small crews—working two or three months in advance of a move to any area—installed a network of piping and utility drops for equipment. The idea was to have power and utilities at the machine so only the simplest connections would be required. Other factors entered into this pre-installation, and will be discussed later.

## You can make moving... a

Now to the actual moves.

Jerry described the first move: "Our new plant was built on a site adjacent to the old assembly plant. When the wall of the new plant reached within 25 ft. of the old, we stopped and erected a temporary wall to close the end of the new plant for the year that final construction would require.

"Then we made a 20-ft. opening in the wall of the old plant so we could funnel material into the new one."

But it isn't as simple as that. Jerry goes on to explain that there were these problems:

**(1) How to move 300 unwieldy benches; wash tanks, spray paint booths and ovens; 7,000 pans of parts; 800 cases of tools; 3,000 calculators in various stages of assembly . . .**

**(2) How to get most of this equipment in the right spot on the second floor of the new plant (the old plant was just a one story facility).**

Let Jerry tell how they did it step-by-step:

"For the benches, we made 12x36x2 in. dollies fitted with 4-in. swivel casters. One dolly went under each foot of the bench and was secured by clamps and wing nut bolts.

"On top of the benches were placed chairs and the shipping cases (the 800 boxes of parts and tools) that our employees had packed just before going on vacation. Incidentally, we used our own shipping cartons for packing tools, and found them very satisfactory.

"Then the whole load—benches, chairs and cartons—were wheeled by laborers to the opening between the two plants. Waiting there was a mobile crane. Two bars were placed under the benches and attached to wire slings. Then the bench was hoisted carefully to the second floor and wheeled to its new place."

Place? How did they know where the bench belonged in the new building? Each area was zoned. Columns were marked A, B, C, etc., south to north and 1, 2, 3, etc., east to west. This formed quadrants—such as D-21. Any

## ... a once-in-a-lifetime opportunity

equipment located within a 12½-ft.-radius of column D-21( columns are on 25-ft. centers and were numbered for the move) was tagged D-21 and suffixed with an item number. For example D-21-2 (item 2 in the circle). To facilitate spotting equipment, the floor was laid out for the equipment and the same number inked on the floor. The move number was prefixed by B, 1 or 2 to indicate the floor. Color codes were also used for various floors.

And with the pre-installation features( using common drops wherever possible) all that was required for installation was a quick connector or a flexible conduit. Easy and simple.

So far so good. But how about the unfinished calculators and 7,000 pans of parts? Jerry describes this move: "The calculators and parts were placed on shelf trucks and wheeled to the opening between plants. Plywood sides were placed around the shelf truck so there'd be no danger of spilling. Then two bars were placed underneath the shelf truck and attached to ¾-in. wire rope. A spreader bar was placed above the cart to stabilize the sling. Then the cart was hoisted carefully and gently by the mobile crane up to the second floor."

After everything was in place, supervisory people came in to unpack parts and set up work stations. Employees had been advised of their new locations before they went on vacation, so they could come right to their new place.

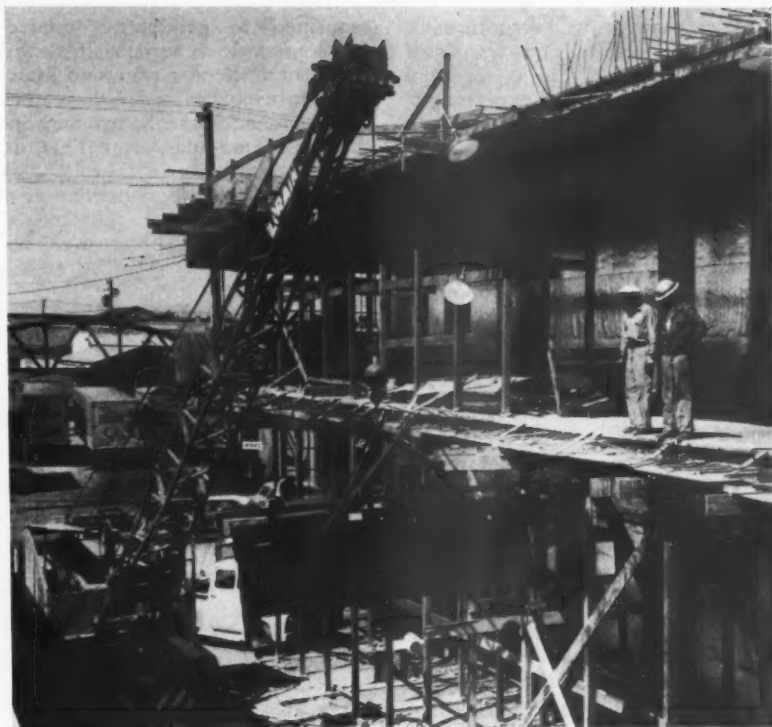
And this they did . . . and production resumed without missing a beat.

"Hey! that's only the simple part of the story," claims Jerry. Okay. How about the rest of the moving?

"The toughest part," begins Jerry, "came when we moved the manufacturing plant. Here we had to move this equipment ONE MILE:

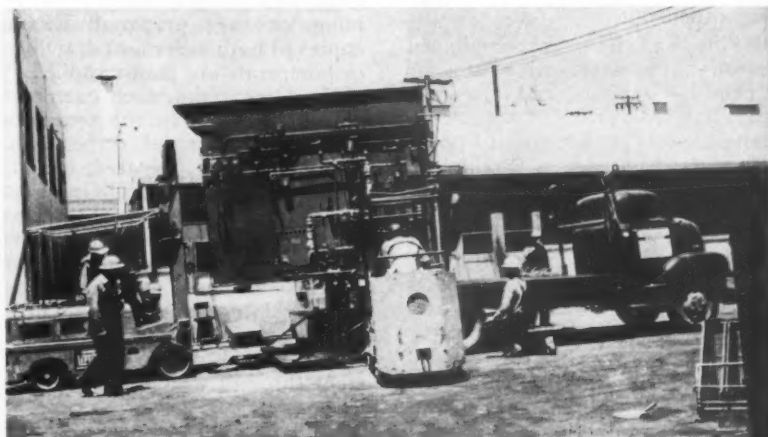
"126 screw machines; 26 heavy and medium presses; 56 light punch presses; 300 pieces of miscellaneous equipment; 2,000 pans

. . . continued on p. 54



**AIR LIFT**—a mobile crane was used to hoist equipment from old plant (adjacent to this new one) to the second floor of the new facility. Tools and parts were placed on top and dollies were placed underneath . . . to enable the bench and equipment to be moved in one compact load.

**FORK LIFT**—Three fork lifts team up to lift this heavy unit on the back of a flat bed truck. Skids were placed underneath top-heavy equipment so the load would be stabilized when raised by fork lifts.





**W**ESTERN FIRMS manufacturing specialty items know how important it is to make prompt deliveries. Fortunately, we have now achieved a degree of production control that lets us do this as a matter of course—yet requires a minimum of clerical attention.

We manufacture "structures of circuitry"—tube and transistor sockets, plug-in units, terminal strips, patch boards, experimenter's chassis and other mountings which our customers use in forming electronic circuits. We supply manufacturers of aircraft, radio and electronic equipment.

For a long time we handled much production control data in our heads, and just sent copies of the original order to the correct production department with a note stating when the order was promised. It was up to the department head to get the order out on time.

This arrangement, obviously, lacked coordination. One department would delay another . . . then there would be a mad rush and things would get jammed up. In addition, with information partly in our heads and partly on various pieces of paper in various places, it was much harder to tie the material in with the orders. It was also difficult to give a customer a comprehensive answer when he called to determine the status of an order.

Today, production control personnel can tell at a glance the exact status of each order—what department is working on it, what departments it must still pass through, what date it is due to be shipped, and whether there is some delay or material shortage holding up completion. Materials and orders are now closely coordinated, and overall production smoothed out.

This has been accomplished through the installation of four Sched-U-Graph boards (Remington Rand)—vertical frames containing 40-in.-wide shingled pockets with visible edges. Production orders are placed in these pockets and signals along the bottom visible edge tell us just what we want to know about each order. Each board contains pockets for 100 orders. The frames swing out from the wall much like the pages of a huge book.

With all information thus concentrated in simple, easy-to-use form, our production control de-

partment can handle a greater volume of work in the same space of time. When a customer phones in, we can tell at a glance where his order is and, if necessary, make a quick check with the proper department via our intercom system for further information.

This ease of reference is not confined to production control personnel. If a supervisor, engineer, or inspector wants to know the status of an order, he comes in and checks the board without bothering anyone else. This, in itself, saves a lot of time.

Here's how the system is now set up:

When an order comes in,

enough material on hand to produce the order, a two-part stock requisition form goes to the inventory clerk. The clerk checks it against our inventory records, maintained in the Kardex system. If inventory is insufficient, she notifies production control. If it's adequate, she deducts quantities required by the order and sends both requisition copies to the stock room. One copy remains there, the other goes along with the material.

Then, working from a copy of the production order, the manager enters its information into our "load book." It indicates just how much work each department has,

## Streamlining production control for meeting critical schedules

*This system allows you to keep tight rein on schedules with a minimum of help . . .*

by **Ray H. Scoville**  
Partner and General Manager  
Vector Electronic Co.  
Glendale, California

our production control manager checks it for specifications and materials. If the order is for a stock item, it goes right to the order clerk where the order is typed, and a copy sent to shipping.

On orders which we must process, we first check for blueprints or drawings. If none accompany the order it must go through our engineering department where blueprints are prepared. Extra copies of both order and drawings or blueprints are photographed.

Next, we assign each customer order a number in the sequence in which it arrived. Production order forms are prepared, including: a copy or Sched-U-Graph: a copy stamped "send with material" which goes with the material throughout production until it is finally shipped; and a copy, or copies, stamped "return to production control". One of these is made for each production department through which the material will pass.

To determine whether we have

and how much more it can handle.

Next, a Sched-U-Graph pocket is set up for the order. The pockets are set up by the order number, which means that orders appear on the boards in the same sequence in which they arrive.

Production orders are sized to fit the boards, so that when the order is inserted in the shingled pocket, information on the bottom line is visible without opening the pocket. This includes order number, date, part number and/or name, quantity, customer name, and shipping date.

The production order is inserted at the extreme left-hand side of the long pocket. Visible next along the edge is an insert listing color-coded department numbers for our eight production departments. Next in line are date and month listings for four full months.

On the month and day listing is a transparent, movable signal, set so it reaches to the proposed shipping date for the order. Also inserted on the date scale are sig-



nals for each department through which the order passes. These are placed on the date the order is due to be completed by that department. A black inspection signal is placed next to each, on the following day's date.

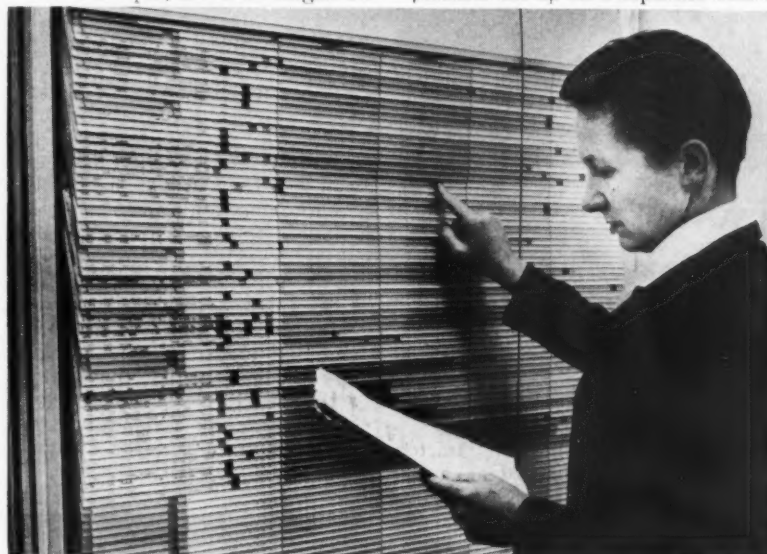
We also have "zebra" signals—with black and white lines on them—which, when placed after a department signal, indicate production is temporarily stalled because of a change in specs, material shortage, etc. The current day's date is indicated on the board by a "date line," a maroon cord that hangs from the top of the frame and is readjusted daily.

For example, an order might be

production order is received, stamped "send with material," which indicates that the order has been completed and shipped. The Sched-U-Graph pocket is then unloaded.

Because the pockets are filled in sequence, they are more or less dismantled in the same order with, of course, a good deal of variation in length of time required to complete an order. However, the result is that by the time we have filled the pockets to the bottom of the fourth and last board, the first board has been entirely cleared, and we can start fresh.

We also have a segment of pockets set up on a separate board



set up with a shipping date of June 20. The signal would be moved to the left into the month of June, and specifically to the number 20. If the order were due to leave Department 2 on May 15, the correct signal for Department 2 would be inserted on 15 under the month of May. The black inspection signal would be inserted on 16, under May. Each department the material was to pass through would be indicated in the same manner on the proper date setting.

When a department finishes with an order and sends it to the inspection department, the copy of the production order marked "return to production control" causes the removal of the signal for that department from the Sched-U-Graph scale. Also removed is the adjacent inspection signal, because if an order is held up in inspection notification comes in via intercom.

Finally, an initialed copy of the

**FINGER TIP CONTROL**—Production Control Manager, **Mrs. L. L. Sullivan**, can give an immediate answer to a customer's query by using this Sched-U-Graph board. The ability to give quick, comprehensive answers has improved Vector's customer relations.

by departments. They tell at a glance the extent of each department's work load. When a customer phones and asks for a speeded-up schedule, we can quickly tell him whether or not it is possible.

Smoother production, better coordination between departments, and better customer relations have resulted from use of this system. Production supervisors get their orders quicker, and management personnel, engineers and inspectors all find their work expedited. Most important, the customer gets the impression that we're always on top of every job going through the shop.

## Bag-house collector cuts smoke hazard directly in the stack

**SMOKE CAN BE** controlled—results from a three-week test period on a smoke control pilot plant prove it.

At Bethlehem Pacific Coast Steel Corp.'s plant in Seattle, tests showed that smoke now coming from the plant's new electric furnaces smokestack can be eliminated completely, with a bag-house collector.

The pilot bag-house dust collector works on the same principle as the familiar vacuum cleaner. There are seven bags, each 12 in. in diameter and 20 ft. long, in the pilot plant.

They've been completely successful in removing the sub-micron range of particulate matter from the small portion of the electric furnace emission directed through the pilot plant.

According to present plans there will be up to 1,000 bags in the full-size unit. They will occupy two buildings approximately 28x40x40 ft. high. The bags are made from special high-temperature silicone treated woven glass fabric.



At Bethlehem Pacific Coast Steel Corp.'s plant in Seattle, Wash., clean handkerchief proves air is dust free. Tests showed that the bag-house dust collector, working on the same principle as a vacuum cleaner, eliminates even smallest particles of dust.



### WHAT DO YOU MEAN BY NEW?

*"The fact that a piece of equipment is new and different does not, by itself, mean a thing," says Mr. G. A. Gilbertson, President of The Frank G. Hough Co. "However, if it will do more in a shorter period of time; if it is faster; if it is easier to operate; if it is more maneuverable; if it will make more money for its owner . . . then this fact becomes important."*

"This is a scale model of the new H-25 'Payloader' which we have just announced. The production unit, now available, is in a class by itself as far as performance and features are concerned. Its carry capacity is 2,500 pounds with a wide range of operating speeds.

"Performance like that offered by this new unit doesn't just happen. There are a number of very good reasons, one of which is experience; the kind of experience which comes from having pioneered, designed and produced more of this type of equipment than all other manufacturers put together.

"Specifically, this new H-25 embodies a combination of new components, well-engineered and well-balanced, like the two-speed, full-reversing power-shift transmission with matched torque-converter; power-transfer differential; power-steering; closed, filtered hydraulic system; sealed, self-adjusting brakes and many other features.

"The turning radius of this 'Payloader' enables it to negotiate 6 ft. box car openings and is actually less

than any other rubber-tired tractor-shovel. The machine has 4,500 lbs. of breakout force and 40 degrees of bucket tip-back at ground level. The load dumping height is 4 inches higher than the average of other loaders in this general category.

"If you are concerned with dust and dirt, like most owners are, you will appreciate the extra attention given to the protective features of the H-25. The engine is given maximum protection with a triple air cleaner system. The filtered hydraulic system is closed and pressure-controlled. The sealing of the majority of all pivot points reduces maintenance.

"The most important thing of all is, of course, the fact that this 'Payloader' will handle more material per hour and at less cost per ton than any front-end loader near its size."

For more information contact your nearby 'Payloader' distributor, also ask him about convenient HOUGH Purchase and Lease plans — or write direct to THE FRANK G. HOUGH CO., 889 Sunnyside Ave., Libertyville, Illinois.

S-A-4

... for more details, circle No. 21 on Reader Service Postcard

## Container holds forced air furnace safe for shipping

**SHIPPING** the Custom-Aire gas-fired forced air furnace is easy — with a special container designed for this specific job.

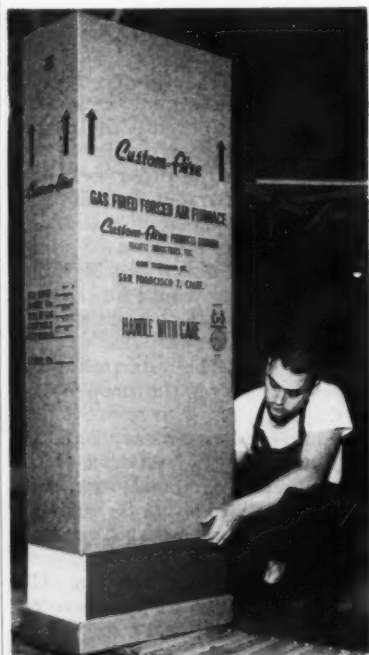
A taped tube is the basic component of the package, with two die-cut roll ends, roll sides and friction lock caps which fit over the furnace and inside the tube.

Caps forming the ends of the container have unstripped hand holds for more convenient handling and transfer of the package. Caps are machine-stapled in place at the sides and end of the tube.

The cap surface touching the furnace is coated with a special scuff-resistant industrial wax to promote maximum protection and a double thickness of corrugated container board is incorporated in the design of the caps for the end of the tube.

Because of this added thickness, the sides and ends of the caps protrude from the surface of the furnace.

The container is manufactured by Fibreboard Paper Products Corp.



Taped tube with two die-cut roll ends, roll sides and friction lock caps, hold furnace securely while being handled.

A Special



Report

# OUTDOOR

# STORAGE

# HANDLING

**T**HE WEST still has wide open spaces, but they're being put to a new use—OUTDOOR STORAGE.

With new plants springing up and existing ones bulging at the seams, a pressing need for storage space has developed. And constructing warehouses is a costly business.

But with nearly every plant having large open spaces surrounding it—and a climate that makes storage on these spaces practical—there's no reason why outdoor storage shouldn't become very practical.

It's not just a question of letting products pile up in your own backyard. Variations in climate have to be considered—and they can be extreme. Try storing asphalt blocks in Death Valley without protection from the blistering heat of the sun . . . you're likely to come back to a glistening black pool. Or precision machined parts along the edge of Puget Sound . . . rust would have a banquet, at your expense.

No sir, storage out of doors is a science . . . just as much as handling material in and out of the storage area is a craft . . . to be carefully studied.

**WI** field editors know this for a very good reason. They've been roaming the West doing research toward one end—**outdoor storage and handling**—and what it can do in your plant. All you have to do is read. When you're totting-up the year's profits, you'll be glad you did.

## What can you store?

MOST ANYTHING.

There's always need for production space—room that's presently being cluttered by storage that could be done equally as well outdoors.

Steel pipe, machined parts, asphalt, pallets, aircraft parts . . . you name it and chances are you could group it neatly and efficiently outdoors.

There are limitations, of course. You folks in Washington and Oregon are worried about rain. Smog's a problem around Los Angeles, and heat in Nevada and New Mexico can crack and blister the toughest surfaces.

It was easy for the Basalt Rock Co., Fontana, Calif. They set up piles of aggregate for outdoor storage prior to processing into

concrete pipe. Well now, hot or cold, rain or shine, not much is going to happen to aggregate.

But when a consignment of Ponderosa pine boards was sold by Sanford Harris Lumber Co., Inc., and shipped to the consignee by the Cascade Lumber Co. it was decided that the pallets of lumber required protection.

From what?

Rain or sun, warping and cracking, extra rough handling . . . elements in transit that might stain lumber.

**Action**—a call to the Portco Corp., Vancouver, Wash., and the problem was solved.

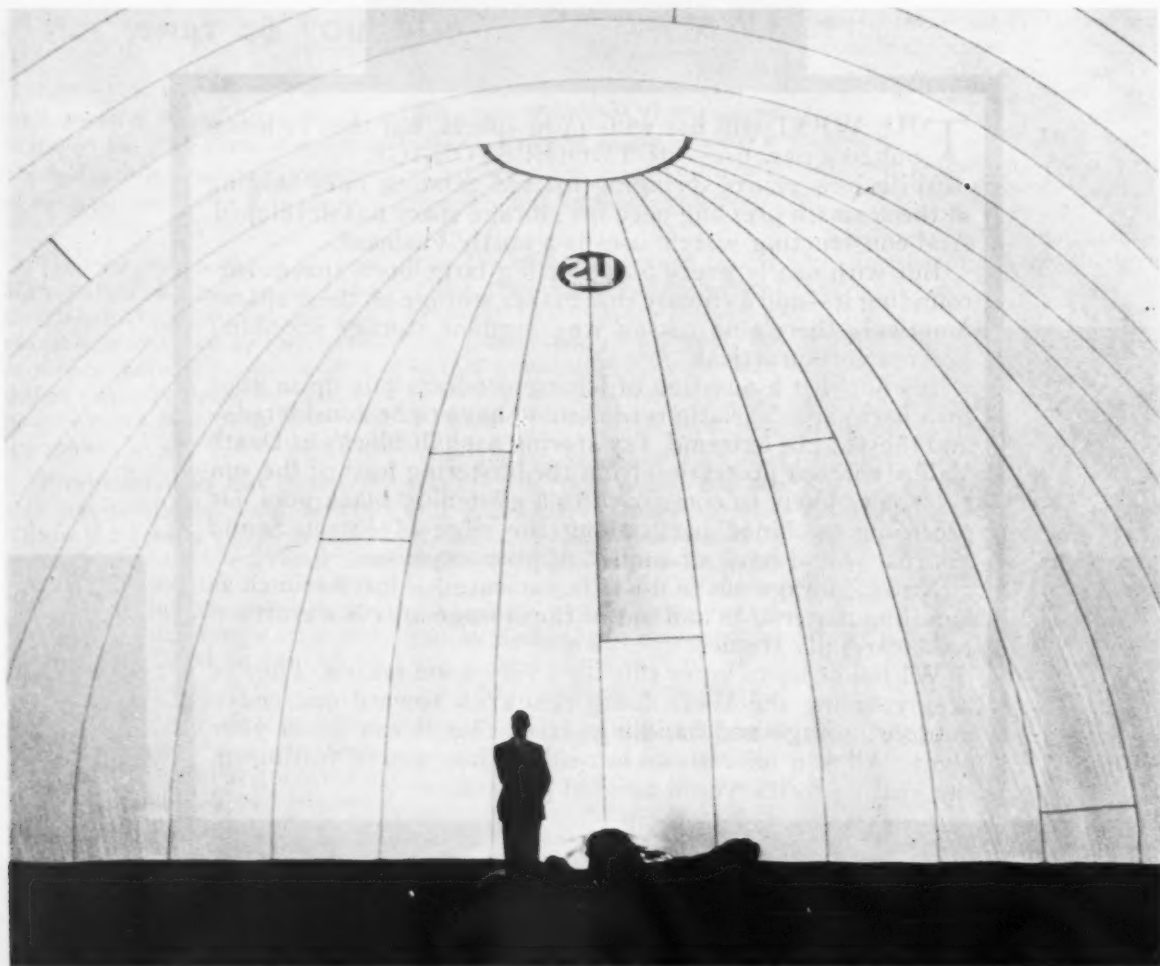
How?—by Sisalkraft prefabricated treated paper covers. They fit like a glove over complete loads, so everybody concerned stops worrying. And a comparison of the volume of lumber you can protect in a shed, and the

volume you can protect with laminated paper covers, shows a 50% annual savings in favor of prefabricated covers.

Because you need only buy replacements, protection costs become less each year.

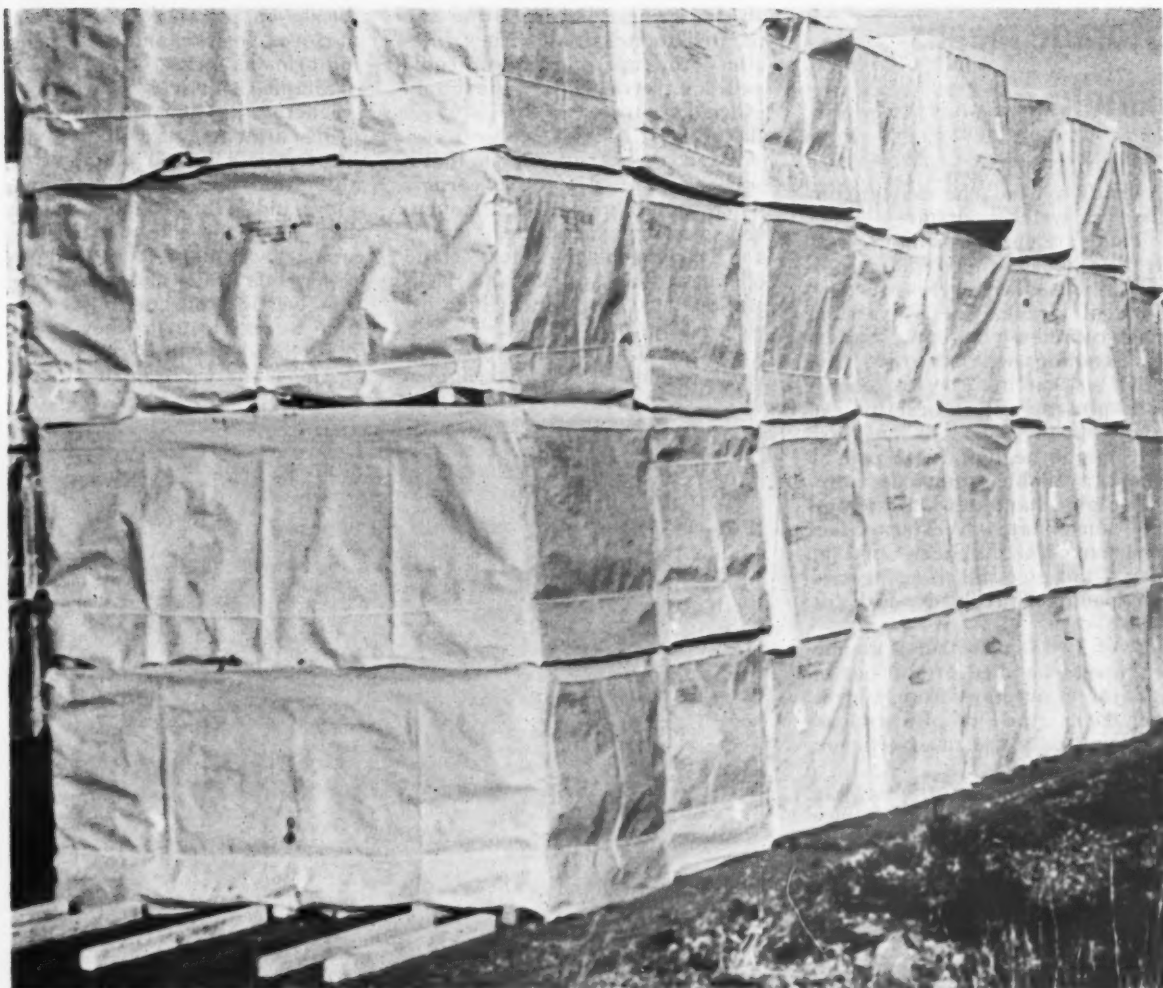
What are these covers made of? . . . separate sheets of kraft paper laminated with asphalt strengthened by a fibre mesh. They come in different shapes and sizes, some with asphalt lamination and others with one side wet-strength treated for use as outdoor dust covers.

Plastic plays a part, too. Polyethylene in pre-formed, heat-sealed sizes has been found to stand abrasion better than reinforced paper. Used as a coating for paper stock it will not delaminate even in the strongest sunlight, and water runs off it like moisture off a duck's back.



**IDEAL FOR OUTDOOR STORAGE**, the Airhouse, developed by United States Rubber Co., is a structure entirely supported by low pressure air. Designed as a portable warehouse, black tube at the base of house is filled with 23,000 lb. of water, which anchor it securely to the ground.





**CUSTOM-MADE PREFABRICATED PAPER COVERS**, manufactured by Portco Corp., Vancouver, Wash., fit like waterproof gloves over pallets of lumber stored out of doors. Damage from handling, weather and impurities in the atmosphere is cut by this newest advance in storage.

BUT PROTECTION is only a part of the outdoor storage story. Racks must be built that are easy to erect and which stand up to unkind weather conditions.

Take the case of the International Harvester Co., Emeryville, Calif. It wanted outdoor storage racks for barrels . . . a unit that would go up quickly and would expand easily.

A talk with Dexion (Acme Steel) representative Ed Vaisnor convinced them that easily cut slotted angle would make building of storage racks child's play. It did—providing the kind of man-sized utility International Harvester was looking for.

Fitting together like an erector set, angles come in 10-ft. lengths. Each slotted angle is galvanized . . . which frustrates rust and doesn't require paint.

But what really intrigued International Harvester Co. was the fact that slotted angles can be used again and again.

Long, wide-open decking made by Sturdi-Bilt, the materials handling division of Union Asbestos Rubber Co. goes up without nuts, bolts, welding or skill.

One-piece rigid frames are slotted in such a way that welded support bars are attached to the frame at any desired point by simply inserting a floating wedge. But you'd better red-lead the frame for outdoors.

Then there are certain types of products—elbows of pipe, flanges, etc.—that because of their size store better in containers than on shelves.

To accommodate these a steel box has been designed with a self-aligning stacking arrangement for

easy spotting. A partial front on each box allows easier part identification and access.

That takes care of items that can be stacked on pallets, stored in boxes or put away on shelves . . . but what about keeping liquid products outdoors?

We've got an answer for that, too.

Gravity feed water storage tanks, and tanks for storing a variety of liquid and granular solids are doing giant size jobs all over the West. They vary from 100 to 10,000 gallons capacity and are so designed that interior cleaning is made easy. Corrosion is countered by the Rheem Mfg. Co.'s process of hot dip galvanizing and glasslining . . . solving the outdoor storage of liquids that enjoy a diet of steel or zinc.

## Storage means handling...

### EFFICIENTLY.

That's a headache existing indoors as well as outside.

There are enough handling aids to fill a book, so let's take a look at a representative cross-section. Fork lift trucks are by far the most commonly accepted material handling work-horses. So much so that it's easy to believe your present one is best for the job.

It might be, but let's look at what's available, and make sure.

For pipe handling and storage the Consolidated Western Steel Division of U. S. Steel Corp. at their Utah pipe mill is using two side-loading Traveloader fork lift trucks.

Over 24,000 ft. of small diameter pipe is handled in and out of a 23-acre outdoor storage area each day... the kind of work load requiring only the most efficient equipment.

Carrying pipe lengthwise, the side-loaders need not turn to face the stacks on which they are to deposit a load... which means they can handle the longest units without excessive clearance.

Consolidated Western also uses the trucks to unload, stack and bring to the point of use lumber used for dunnage and flatcar stakes.

Where there's more room to manipulate loads, like at the Standard Oil Company of California's storage and distribution center at La Habra, Calif., pipe and casing weighing 20 tons is unloaded and stacked in storage by a Hyster 150 lift truck with 15,000-lb. load capacity. With a crew of two it takes 15 minutes.

At the same storage center a two-day job has been cut to two hours by the same Hyster equipped with a spreader bar, which removes 30-ft. sucker rods from flat bed trailers and stores them in neat piles outdoors.

Rain, snow, sleet or freezing weather could slow up the efficiency of an operation like this if trucks weren't equipped with completely enclosed cabs.

Designed for a perfect fit, cabs are available for most pneumatic tire equipped industrial trucks. Safety glass windows which turn down or slide... electric wind-

shield wipers... with the cab painted to match the truck. Result—the operator is protected and kept working at maximum efficiency.

And so it goes.

Hand operated units that'll squeeze into difficult corners where power models find maneuvering tough. Stackers, cranes and working height lifters. Hand operated floor trucks and jack-stackers you wheel but which lift electrically.

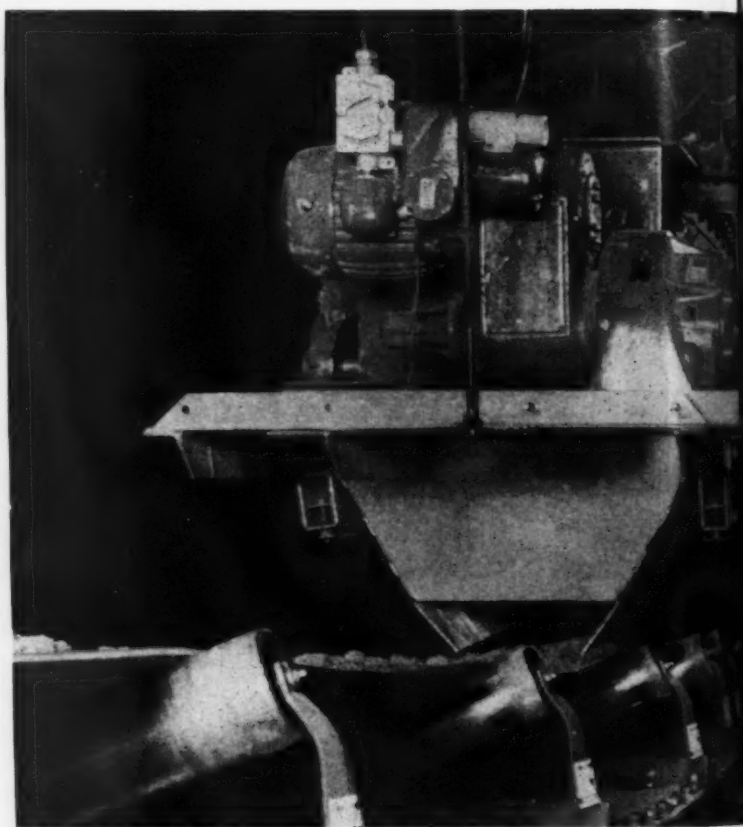
There's a right truck for every job... and it pays to recognize

forms, he just leaves the clamp in closed position and uses clamping arms as forks.

Simple, isn't it?

There's no limit to the added utility attachments will give your lift truck. The roll clamp available from the Towmotor Corp., Cleveland, Ohio, makes a standard unit look like a prehistoric monster yawning... but it'll grip paper rolls firmly and rotate them to a vertical or horizontal position even though they weigh 7,000 lbs.

And while we're in the animal-



**HIGH CAPACITY belt feeders burrow through tunnels**

the right one when you see it.

### Attachments help, too.

Like the Lewis-Shepard Master Universal Clamp that holds the sides of non-palletized objects hydraulically and is especially effective in handling bales and cases.

All the operator does is run the truck up to the load so that the clamping arms straddle it, clamp it between the arms, lift the load off the floor and trundle it indoors for production. If he wants to handle pallets or skid plat-

simile mood, how about the triple lift mast, giraffe-like attachment that has a maximum of 144 in. lift and an over-all height of only 71 in.?

This means that you can run into rail cars, tote the load, scuttle down a ramp and position the load in your outdoor storage area to a height of 12 ft. By comparison, a standard mast with 120 in. lift has an overall lowered height of 83 in.—which may just keep it out of the box car and overcrowd the storage area because it necessitates lower stacking heights.

And there are other handling devices.

There's a ramp for lift trucks designed for one man handling. It's got non-slip grating tracks that permanently eliminate traction problems from snow and ice, as well as oil and grease build-ups.

Available in 58-in. and 70-in. widths and 30 and 36-ft. lengths, the ramps, manufactured by Magline, Inc., Bay City, Mich., have capacities ranging from 11,000 to 16,000 lbs. Full pneumatic wheels with high speed bearings are

tion rolling at peak efficiency, a steady flow of material had to be maintained.

The solution came in the form of giant Gerlinger straddle trucks, first developed by Carl Gerlinger at his neighboring Dallas factory.

At present the Willamette Co. operates a fleet of seven Gerlinger 4 MH Carriers, each of which has a 14,000 lb. load carrying capacity. They cover a vast storage yard and a series of docks and sheds spread out over 40 acres.

Travelling over established

**What about conveyors? . . .**

They're important.

Especially if you're storing and handling granular solids. You know, the kind of material that slithers and slides and laughs defiantly at fork lift trucks.

Well, it was just this kind of problem that faced Blomquist Oil Service, Inc., when they added an asphalt plant to their operations at Redwood City, Calif.

Aggregate had to be unloaded from railroad cars and carried to large open storage areas. It had to be done quickly and economically, so a Barber-Greene 24 x 72-in. incline belt conveyor was installed to carry the loose material from a track hopper to a self-propelled radial belt stacker. A National car shaker was mounted adjacent to the rail siding to speed unloading—with the result that the average car can be unloaded in 15 to 20 minutes.

The joy of this operation is that it's all automatic.

An 81-in. self-propelled radial belt stacker swings through a wide radius to stockpile between 7,500 and 10,000 tons of six different sizes of aggregates.

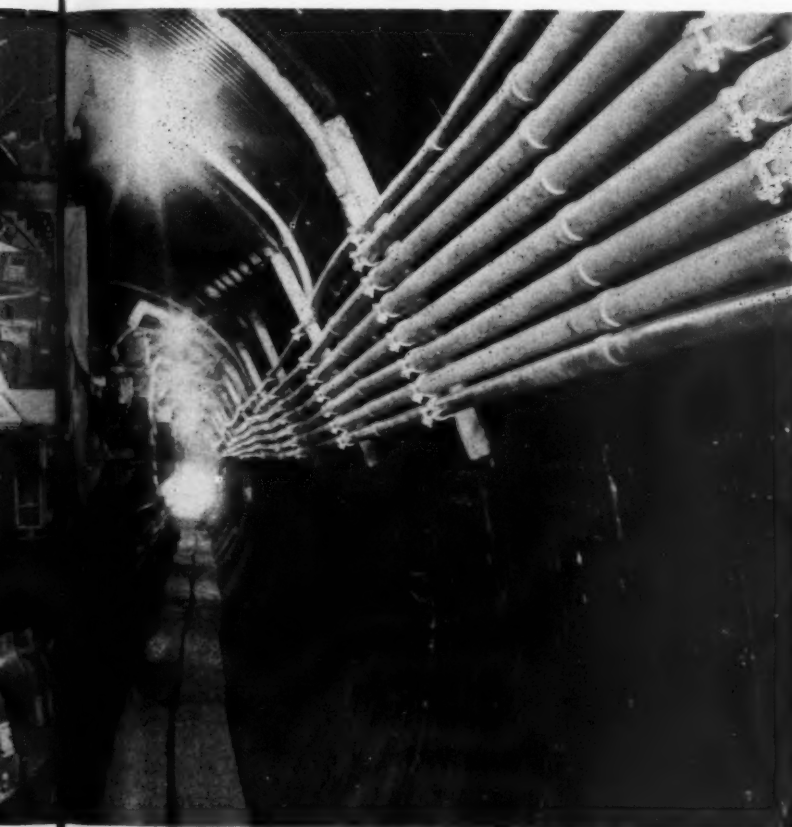
Under the stockpile runs a 160 ft. steel tunnel tube, 7 ft. in diameter. Inside the tunnel is a conveyor which delivers the cold aggregates to an asphalt plant drier, the cold material being blended onto the tunnel conveyor by six 24-in. automatic belt feeders.

Control of the whole operation is from a sequence-interlock push-button station adjacent to the asphalt drier.

Conveyors aren't limited to granular material.

At the Weyerhaeuser Timber Co., Longview, Wash., logs are handled by conveyor, too.

Timber is received by rail and truck in standard 8-ft. lengths and unloaded by a fork truck with a special carry-lift attachment for logs. It positions its load on a conveyor. This unit handles logs through barking and chipping operations and finally whisks them into temporary outside storage areas. Afterwards, chips are reclaimed by conveyors and carried to digesters—from log to pulp without handling, and with outdoor storage requiring little or no off-production-line effort.



... to reclaim material from overhead storage piles

standard.

That's all it takes. A snippet like that could save you real money . . . especially if the alternative were a hydraulically operated bridge costing anywhere up to \$4,000.

#### **Straddle Trucks . . .**

They're a boon to handling.

The Willamette Valley Lumber Co., Dallas, Ore., was faced with the problem of handling 70,000,000 bd. ft. of lumber and 72,000,000 sq. ft. of industrial plywood each year. To keep produc-

routes they move 280,000 bd. ft. of lumber a day and eliminate costly delays in processing and shipping by feeding sawed lumber rapidly to the planing mill, the dry kiln and the loading docks.

Loads are not palletized, but are picked up on carrier blocks. And in all of its Gerlinger handling operations over the past 10 years, the company has not had a single injury.

Maintenance costs, excluding fuel and lubricants, average only about \$3.35 per unit, per working day.



### Loading loose material's hard . . .

Yes.

But there's special equipment designed for this very task.

Take Scoopmobile for instance. Manufactured by a Western firm, Mixermobile Manufacturers, Inc., Portland, its fabricated steel compaction wheels serve not only for traction in the muddiest storage yards, but also as a compactor and tractor to pull sheeps-foot rollers, wobbly wheels, etc. And the giant scoop bucket is ideal for handling sand, crushed rock or even wood chips.

A similar job, on a smaller scale, is done by the Frank G. Hough Co.'s Payloader.

At the Coos-River Boom Co., a subsidiary of Menasha Plywood Co., in Hauser, Ore., a Payloader

was put on the job of carrying logs from storage to the cutting area. Previously, a crawler tractor with dozer had pushed the logs (plus much dirt) across the log yard to the saw mill.

The first result of the change-over was a saving of \$17 a day in saw teeth that had been blunted on dirt gathered in the dozing operation . . . and increased speed in handling logs.

### Are cranes practical? . . .

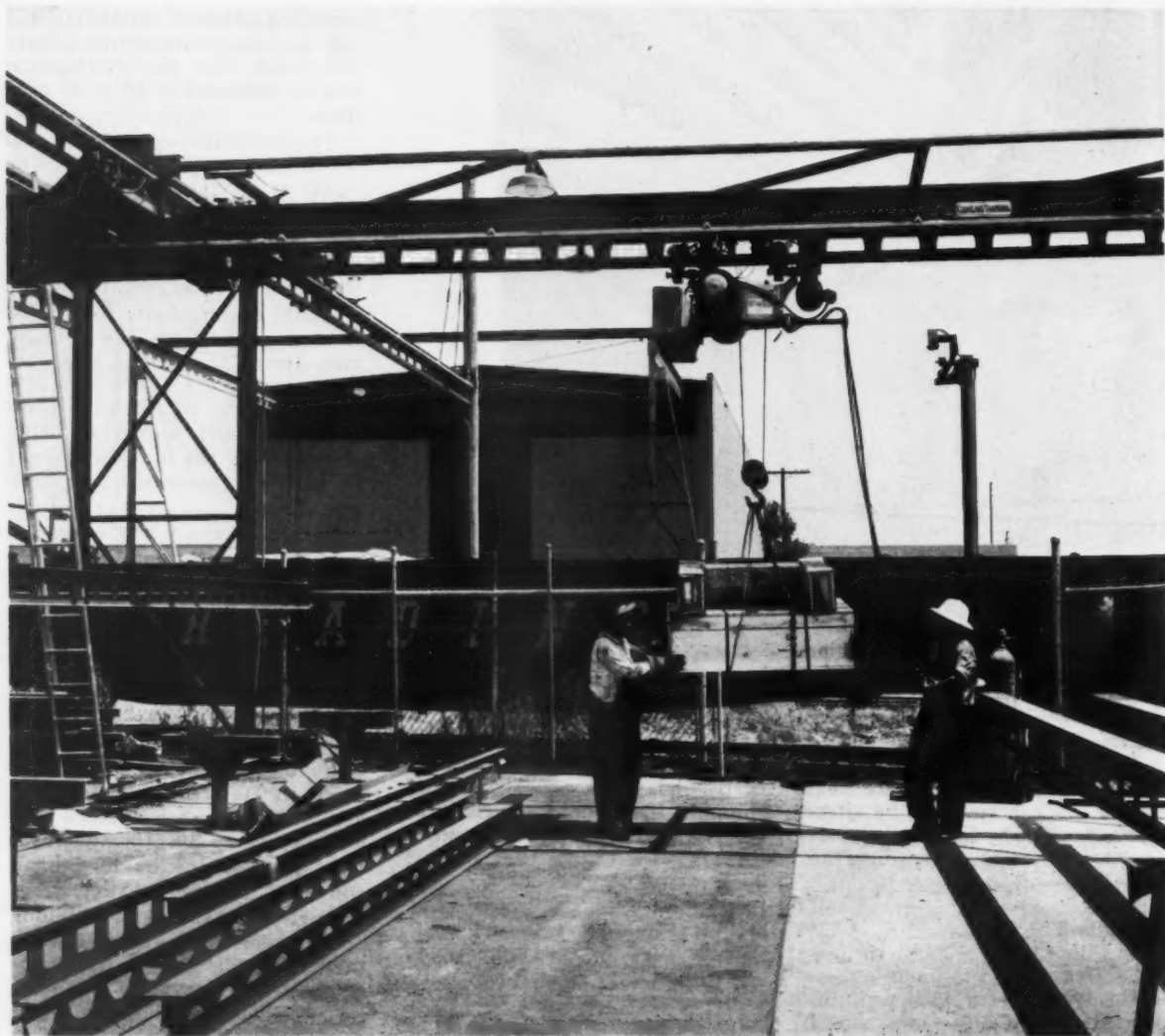
Sometimes.

Provided you have the type of outdoor storage calling for heavy lifting. And remember, it's necessary to have an overhead rail system reaching key load and unload points in your storage area.

When the Cleveland Crane and

Engineering Co. joined forces with General Conveyor, Inc., new facilities were erected in Los Angeles. Located on an acre of land, the new plant maintains a tram-rail system consisting of an interlocking transfer crane, with transfer spurs running outside. This allows complete unloading from the company spur, served by the Santa Fe, with a swinging jib crane interlocking with the crane runway to facilitate easy handling.

Time-money savings make the installation a necessity—but remember that the products being handled are sections of heavy arch beam rail. If the material you're handling and storing is less weighty, you're better off with a lift truck. It's more mobile and with all the attachments now



**TRAMRAIL SYSTEM** permits direct unloading from Cleveland Crane & Engineering Co.'s rail spur in Los Angeles. System consists of an interlocking transfer crane, with transfer spurs to the outside, single-leg gantry crane. The arrangement is served by a swinging jib crane interlocking with crane runway.





**LAMINATED PUNCTURE-PROOF TIRES** enable this HA "Payloader," owned by Aluminum and Magnesium, Inc., to swing into action handling aluminum and magnesium scrap at the company's yards in Corona, Calif.

available, there's hardly a thing it can't do.

Weight is one limiting factor . . . there must have been many times when you've eyed a piece of equipment doubtfully, wondering if it's too heavy to handle.

Well, there's a hydraulic crane scale you can attach to the lift truck, elevate the forks and find immediately what the weight is of the load you're going to carry. It's manufactured in six capacities from 1,000 to 20,000 lbs., so you don't have to worry about there being one to fit your needs.

Accurate within  $\frac{1}{4}$  of 1% of capacity, the 10,000-lb. capacity scale weighs only 79 lbs., and for easy reading the gage can be tilted in any position from 15 deg. up to 25 deg. down . . . eliminating need for a central weighing station.

## You don't have to be a genius

### BUT BE SMART.

Keeping up with the latest developments in outdoor storage and handling is a simple matter . . . it's as easy as reading this report. A fact here and a fact there stick in your mind. One day you'll find you're glad they did.

Take the fact of the Guide-O-Matic tractor in use at Nalley's Inc., in Tacoma, Wash. Because it's able to scurry around the plant without an operator and pulling a heavy load, it's different enough to remain fresh in your memory.

But if you know the heavy-duty model is powered by a 24-

volt battery . . . can haul 4,000 lb. . . is guided by means of radio waves . . . and stops automatically at load and unload spots, you may find it would fit into your outdoor materials handling system.

In the same way you may have been bothered by faulty casters on some of your hand trucks. Not a big problem, but irritating enough to cause lost time and frayed tempers.

It's then that it would be handy to know about the newest advances in casters.

It may be that triple grease sealed casters with neoprene vulcanized retainers would do the trick. At least you could be sure that swivel and wheel bearings would be protected wherever steam, dirt, chemicals or water might threaten trouble.

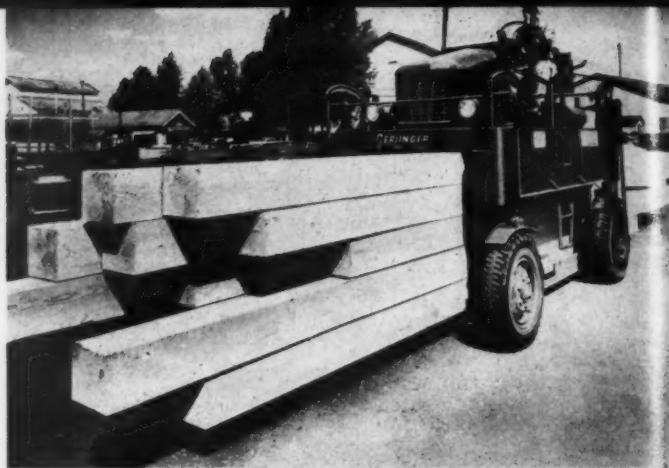
## But mark this...

Outdoor storage is here to stay in the West. And where there's storage there must be handling. They go together like bread and butter.

So find out what's cluttering up your production space and plan a storage area in your own backyard.

You've read what **WI** editors encountered in their trips into the field . . . now take a long, cool look at your present handling system and see if you're getting the most where it counts.

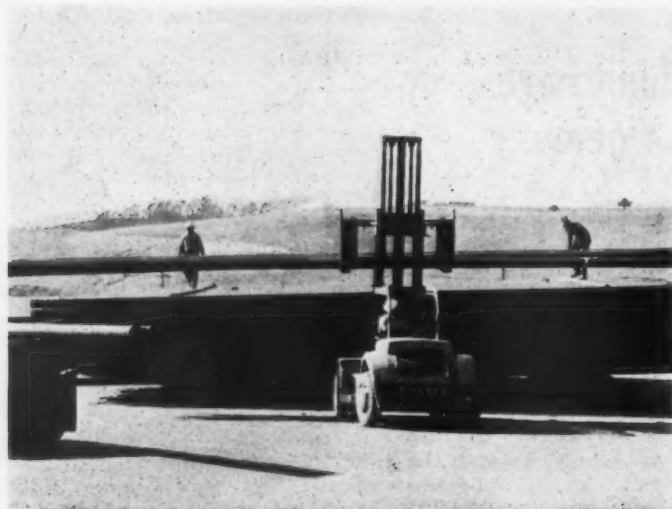
Profits depend on knowing. You depend on profits. Don't let yourself down.



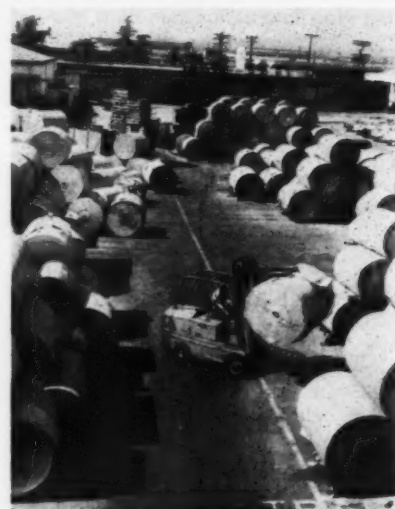
**THE EASY WAY TO CARRY LUMBER** is demonstrated by this Gerlinger Model 14MH carrier busy about its work at the Willamette Valley Lumber Co., Dallas, Ore.



**STORAGE SPACE WAS INCREASED** 2,500 sq. ft. when Thorpe Insulation Co., distributor of Johns-Manville insulation, put in units of Dexion (Acme Steel Corp.) slotted angle.



**LIFTING PIPE'S EASY** with this Hyster 150 Model, 15,000-lb.-capacity lift truck. A 20-ton load (sections up to 50 ft.) can be unloaded in 15 min.



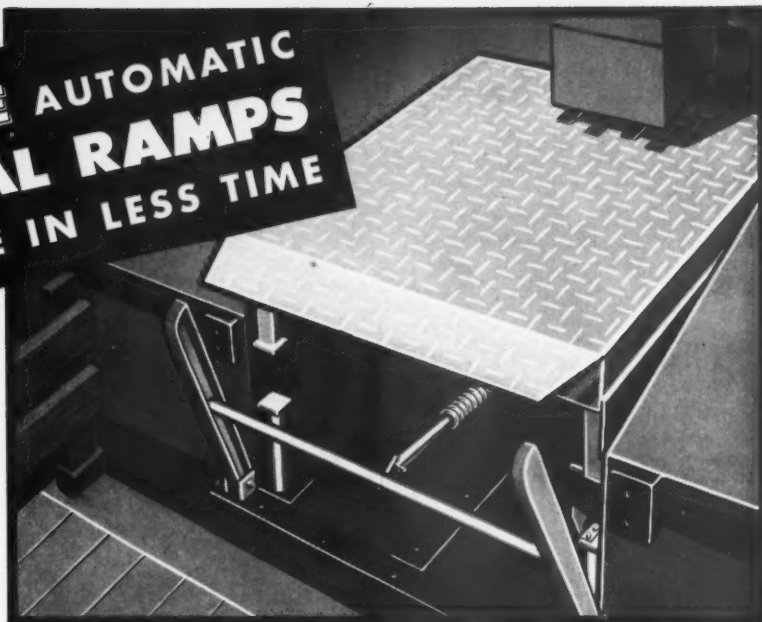
**HANDLING 200 TONS** of paper rolls each day is an average feat for this Yale grab truck.

**A SPECIAL SECTION OF THE AUGUST 1958 ISSUE OF WESTERN INDUSTRY, 609 MISSION ST., SAN FRANCISCO, CALIF. REPRINTS AVAILABLE AT 25c EACH UP TO TEN COPIES. PRICES ON LARGER QUANTITIES ON REQUEST.**

# NEW!

## INSTALL GLOBE AUTOMATIC MECHANICAL RAMPS TO LOAD MORE IN LESS TIME

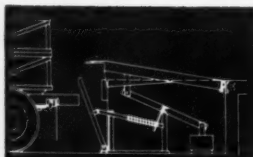
**Built with  
RUGGED SIMPLICITY  
to take a  
brutal beating!**



Equipping your loading dock with Globe Mechanical Ramps increases its capacity. You can handle more traffic, get trucks in and out faster. In addition you save two ways on both initial investment and operating costs. Starkly simple in design and built with Globe's traditional "beefed-up" strength, the Ramps stand up under punishing conditions to give long, dependable performance.

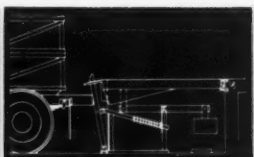
Fully automatic, and actuated by the truck backing against the mechanism, Globe Ramps are truly unique in the mechanical dock board field. Independent of driver's skill, and whether the driver comes up hard or eases into the dock, Globe Ramps always respond the same way . . . with positive acting counterbalanced linkage that defies weakness, wear or need for adjustment. Rugged beams (not spindly springs) actuate the simple counterbalanced mechanism.

Extra features include operation by either or both push-bars, automatic level lock, automatic compensating hinge for out-of-level truck beds, automatic drop check, safety skirts, simple installation. Three types to choose from.



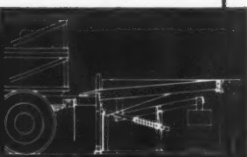
**1 CONTACT**

Counterbalance holds platform in "up" position until truck backs into push-bars. Initial contact compensates counterbalance weight.



**2 ACTION**

Continued movement of push-bars lowers platform until it meets carrier bed.



**3 AT REST**

Over travel of push-bar holds platform lip firmly to carrier bed and, thru spring action, holds contact as bed level raises or lowers with load changes.

### SPECIFICATIONS MODEL TM-68-ML

1. PLATFORM SIZE AND TYPE: 6' wide x 8' long, including lip, non-skid steel plate deck reinforced and welded.
2. CAPACITY: Sustains 20,000 lbs. working load for roll-over (dock to carrier) and cross travel (dock to dock).
3. OPERATION: Automatic leveling locks hold platform at dock level for cross travel. Platform raised to "up" position manually by cable release or automatically by push-bars. Lowered automatically by push of truck or trailer on either or both push-bars. As carrier moves away, counterbalance returns platform to "up" position.
- 3A. If carrier should pull away from Ramp, platform moves down to dock level position.
4. ADJUSTABLE HINGE: "Floating" linkage, between Ramp and dock, permits 4" maximum tilt to compensate automatically for out-of-level carrier beds.
5. SELF-LEVELING: Ramp "rides" up and down automatically as bed height changes during loading or unloading.
6. RAMP LIP: 14" lip section at angle designed for easy roll-over traffic at all Ramp elevations.
7. LIP TRAVEL: Minimum of 15" above and 12" below dock level.
8. SKIRTS: Protective sheet guard plates enclose both sides of Ramp platform when raised.
9. HINGE PLATE: Field added to dock hinge support channel.
10. COUNTER WEIGHT: 3-compartment steel fabricated box suspended in actuating mechanism for concrete ballast to be supplied by contractor.
11. INSTALLATION: Complete instructions shipped with Ramp.
12. COMMERCIAL STANDARD: Complies with requirements of Industrial Lift and Loading Ramp Institute, as approved by U.S. Department of Commerce.

Specifications for Models TM-68-MS and TM-68-MF sent on request.

**GLOBE**  
*acific*  
**Trans-O-Matic**  
**MECHANICAL RAMPS**

PLANTS: DES MOINES—PHILADELPHIA—LONG BEACH, CAL.

GET YOUR FREE COPY of illustrated descriptions and specifications covering Globe Mechanical Ramps. Write today.

**GLOBE PACIFIC HOIST COMPANY**

1461 Canal Avenue, Long Beach 13, California

**WORLD'S MOST COMPLETE LINE OF  
INDUSTRIAL LIFTS AND RAMPS**





# —Outdoor storage and handling manuals—

yours for the asking . . . use postcard, p. 75

## Digging with a difference

What's the difference between digging with an ordinary tractor-shovel and digging with a Payloader?—read this booklet and find out. Its powerful leverage offers a force to serve you that's equal to the weight of almost the entire machine. Load forces are transferred to the ground by using the break-out pads as a fulcrum. With conventional machines, stresses are absorbed by the machine itself because the front axle is used as a fulcrum. And you get bigger bucket loads—faster, as well as greater stability, operating ease and better axle oscillation. If you need more convincing, look at the diagram illustrating better traction available with power-transfer differentials . . . or at the block diagram on the center spread. What more can we say—except that this is valuable reading. Get it. **The Frank G. Hough Co.**  
... for your copy, circle No. 150

## Catalog on special purpose hand trucks

These trucks are a result of over 15 years development which has produced a line including more than 70 different models and types of modern hand-truck equipment. On page 1 of this 34-page catalog there's a list of industries that use ROL-AWAY equipment, and one look will convince you they're impressive enough to use only the best. Building and plant maintenance devices . . . a variety of stock pickers . . . special ladders as well as units for washing and changing fixtures, add to a wide selection of modern utility trucks to achieve one result—savings for you. Pictures, charts, diagrams, specs are all here in easily digestible form. It's worthwhile reading. **ROL-AWAY Truck Mfg. Co., Inc.**  
... for your copy, circle No. 151

## Booklets detail lift truck operations

Know all about lift trucks?—well, what about Yale's Integrated Design, how many years research did this gem take to develop? The answer's on page 2 of this 24-page goldmine of information. And with it are details of torque transmission . . . fluid coupling . . . cushion and pneumatic tired trucks . . . whole series of attachments, as well as a detailed cut-away of the gasoline engines these type GS fork trucks use. Specs, action pictures and blown-up diagrams pack the book with interest, and the partial selection of special attachments on page 19 will set you writing to know about those not included on the list. Another illustrated 20-pager highlights Yale's industrial tractor shovel, while a third uses pictures and specs to introduce you to 15,000 and 16,500 lb. capacity gasoline powered lift trucks. It's an introduction you'll find preliminary to a profitable friendship. **Yale & Towne Mfg. Co.**  
... for your copy, circle No. 152

## Fused phenolic resin protects plywood surfaces

CreZon is an overlay sheet of wood fibre and phenolic resin (mixed with wood fibres and formed into a sheet with a thickness of 0.014 in.). With a phenolic glue-line added, the sheet is ready to be fused to plywood. The result is an economical building material that takes paint better than wood, is easier to work and is impervious to weather. Applications and technical information are detailed in this diagram-filled 8 pager. It's a product you should know about, too. **Crown-Zellerbach Corp.**  
... for your copy, circle No. 153

## Two booklets feature conveyors, cranes

Logs, chips, coal, stone and a wide variety of other material are pictured in bulletin 455 being handled fast and efficiently by conveyors. Diagrams, photographs and blueprints transport you to on-the-job locations—and if you think you've seen everything in the conveyor line, look at the back cover. While you're at it, get bulletin No. 0-2476 describing the engineering and operating advantages of Spanmaster cranes. It's packed with pictures, charts and descriptions of the suspension principle in overhead crane operation—combined to make very easy and informative reading. **Jervis B. Webb Co.**  
... for your copy, circle No. 154

## All-purpose loader pays dividends

The story of time-saving, money-saving log, lumber and pulpwood handling the year 'round is the subject of this 34-page catalog featuring the Pettibone Cary-Lift. Four models: fork . . . swivel clam . . . sling . . . and super sling, are described in detail through the aid of pictures, blueprints, diagrams and photographs. Outstanding operating features of the Cary-Lift, such as hydraulic adjustment for chassis tilts, four wheel drive, and a method for pulling itself out of mud or snow, are brought to life in this colorful publication. **Pettibone Mulliken Corp.**  
... for your copy, circle No. 155

## 120-page catalog highlights belt conveyors

The complete story of belt conveyors is packed between the covers of this picture-filled, diagram-packed 120-pager. There's enough information and necessary engineering data given for an engineer or layman to design a belt conveyor for average service. You'll solve a lot of problems by simply using the Terminal Selection Tables. They're indexed and classified so that it's easy to select the right conveyor for your special task. Necessary equipment for building a belt conveyor is listed, such as: anti-friction belt idlers in steel and cast iron, steel and cast iron conveyor pulleys, conveyor belts, takeups, backstops, trippers, belt cleaners, etc. **The Jeffrey Mfg. Co.**  
... for your copy, circle No. 156

## Ross carriers—the one-truck fleet

It's a one-man operation . . . it loads itself in 5 seconds, in capacities up to 50,000 lbs. . . . it travels with speeds up to 56 mph. . . . and it unloads itself in 3 seconds. What is it?—A Ross carrier and subject of this colorful 16-page booklet jammed with action pictures and actual case studies. Parts are dissected to show their interior working, and tables on the back cover detail specific operating characteristics. Another booklet, an illustrated fold-out, pictures the Clarklift with triple stage uprights in action. Dimension tables and blueprints will make you glad you sent for both publications. **Clark Equipment Co.**  
... for your copy, circle No. 157

## How to solve dock problems easily

Got a high carrier and a low dock . . . restricted turning space . . . narrow car doors . . . equipment underclearance? If you have, you'd better browse through this concisely written fold-out on units designed to make loading easy. Mobile loading ramps to suit every need are pictured and described. When you get to the back cover read every word . . . you'll be missing something if you don't. **Magline, Inc.**  
... for your copy, circle No. 158

## Casters keep profits rolling

Moving 306 deg. F. liquid nitrogen safely calls for casters that are shock-free and smooth-rolling—chance spilling could mean dangerous cold burns. That's why, even if you just move tin cans, it pays to know about the load rating, size, swiveling action and characteristic of casters. Six four-page fold-outs give you these facts and more. Through pictures and diagrams as well as specs and charts you'll get a hundred ideas of how casters can fit profitably into your outside handling system. **Faultless Caster Corp.**  
... for your copy, circle No. 159

## Traxcavator—many-use machine

Conveyors at a Western cement plant are being kept busy feeding gravel from the stockpile to the plant by a Traxcavator—subject of this beautifully illustrated 8-page booklet. It has a host of applications: loading light, bulky materials; moving lumber and logs (with a pulpwood fork attachment); and generally making material handling a part of a swift, safe production pattern. Pictures and diagrams add perspective to this very readable booklet. **Caterpillar Tractor Co.**  
... for your copy, circle No. 160



### Open decking without bracing

No nuts, bolts, erection welding or skill are required to install Sturdi-Deck storage shelves. They're long (48 x 96 in.) and can be assembled for your outside storage needs in a matter of minutes. As your inventory changes they can be adjusted instantly and it's a matter of greatest ease to relocate, rearrange or disassemble these units. And here's a 4-page fold-out that gives you the whole story of outdoor shelf storage. See that diagram on the back page? . . . couldn't you use a unit like that? **Sturdi-Bilt, Material Handling Division of Union Asbestos & Rubber Co.**

. . . for your copy, circle No. 161

### Herc-Alloy chains guarantee safe lift

Unlike ordinary sling chains, those detailed in this 32-page booklet never need annealing . . . they'll never crystallize or develop brittleness. And there's a tag on the top link of every chain that's a written guarantee it's been tested to TWICE its rated working load limit. Physical properties of the chain are eye-openers . . . tensile strength after heat treatment more than 125,000 psi. . . . average Brinell hardness 275 . . . and minimum elongation at break test 15%. **Columbus McKinnon Chain Corp.**

. . . for your copy, circle No. 162

### Lift hoists help handling, too

Run a monorail outdoors and attach a noiseless, worm-drive electric hoist and you have the basis of a really efficient handling system. Just how efficient is made crystal clear in this colorful 20-page booklet packed with pictures and diagrams as well as specs, charts, blueprints and examples of the many uses of overhead handling. Look at Fig. 44—that's one application that could save most of you a mint of money. **Electro Lift, Inc.**

. . . for your copy, circle No. 163

### Hand hoists, slings and wire ropes

They're all important in the material handling field . . . and each of these four picture-packed, fact-filled booklets gives a host of reasons why. Electric hoists, subject of one booklet, can be run out on a monorail to become a vital part of outdoor handling. Specs, diagrams and charts detail application possibilities. Sling chains, subject of another booklet, are vital in 'most any overhead handling operation. Just look at page 3 of the ACCO booklet "Registered Sling Chains" . . . see what we mean? Hand hoist characteristics are covered in a concise 8-pager, while wire rope slings are clearly analyzed and their advantages listed in a four-page fold-out. All make interesting reading and will make a valuable addition to your files. **American Chain & Cable Co., Inc.**

. . . for your copy, circle No. 164

### Electric-driven gas-powered fork truck

Lifting, tilting and tiering come easily to this 4,000-lb. capacity center control fork truck. Just how easily is the subject of this fold-out complete with operation blueprints, charts and details specs. Page 3 is an engineer's dream. It tells the characteristics of this valuable electric-driven gas-powered fork truck with pneumatic tires in a way mere words might fail to capture. Figures do the story telling and they're quite a story to tell. Read it and see. **Automatic Transportation Co., Div. of Yale & Towne Mfg. Co.**

. . . for your copy, circle No. 165

### Study package highlights lifting units

There's one sure way of learning about material handling equipment . . . to see it in action. The next best way is to read this series of job studies of equipment in action. Towmotor units are pictured at work in on-the-job case studies of the paper products . . . wine bottling . . . and fruit growing and packing industries. In addition, there's a standard specification folder that details working characteristics of Towmotor equipment. Gerlinger lifting units are pictured in job studies G-104 and G-107 and are mechanically detailed in a Gerlinger standard specification folder. This is a collection of literature that'll prove a great asset to your operations. **Towmotor Corp.**

. . . for your copy, circle No. 166

### Build your own storage racks

All you need are Acme Steel Dexion slotted angles. Their shape allows complete standardization for any application and the slotted angle may be cut, then bolted through the precision spaced slots and holes as simply as a child's steel erection set. They come in 10-ft. lengths and you need just breeze through this giant fold-out to see how infinite the application possibilities are with this

all-purpose fabricating steel. The fold-out—21 x 34 in.—pictures more than three dozen applications—one or more is bound to suit your needs. **Acme Steel Co.**

. . . for your copy, circle No. 167

### Crane scale saves in every industry

A hydraulic crane scale that can be certified, eliminates need for a central weighing station, and can save time and money in 'most every industry, is the subject of a colorful manual packed with pictures. And the scale has no ordinary diaphragm, it moves with its backing plate to give a constant, piston-like stroke, displacing as much fluid as a piston load cell. The Sensater scale weighs about half as much as other crane scales of comparable capacities and requires less headroom. It's accurate, lightweight, has a high safety factor and an adjustable gage that can be tilted in any position from 15 deg. up to 25 deg. down. Two similar publications give facts on the firm's load cell systems and lift truck weight indicators. **Martin-Decker Corp.**

. . . for your copy, circle No. 168

### Paper covers save up to 50%

When you want more storage space, why build a shed? All you need is a selection of laminated paper covers as detailed in this fact packed fold-out. Sure, it costs more than regular wrapping paper, but look at the savings: labor costs are cut (two men can apply cover in 30 seconds.)—and it can be re-used if handled carefully. And look at the table on page 2—that should prove the manufacturer's claim that you can save up to 50% on outdoor storage by using laminated paper covers. **Bemis Bros. Bag Co.**

. . . for your copy, circle No. 169

### Fork lift plus roll clamps equal profits

A giraffe has a very long neck and is the tallest of quadrupeds . . . a fact you'll be reminded of when you see a Towmotor equipped with a triple-lift mast. Mounted on a model 500-P Towmotor, the mast raises to 144 in., at the same time has the capacity to lower to an over-all height of only 71 in. with 3 in. free lift. Featured on a spec sheet complete with tables listing ranges of lifts, it has a variety of features you'll want to read about. And there's another fact sheet with it. It's about roll clamps that can be attached to give lift trucks more handling versatility than you ever dreamed of. Get them both. **Towmotor Corp.**

. . . for your copy, circle No. 170

### Steel tanks solve storage problem

Tank storage is nothing new . . . but you'll find there's a lot you didn't know about it when you read this beautifully printed, data-filled booklet. Pictures, diagrams and on-the-spot photographs tell the steel tank story in easy to read, easy to digest terms. Whether it's underground or above-ground tanks, hydro-pneumatic or filter system tanks, portable storage or specialty tank products you're interested in, the answers are all here. Dramatic sketches add the final touch to a booklet everybody can, and SHOULD read. **Rheem Mfg. Co., National Contract Sales Dept.**

. . . for your copy, circle No. 171

### Hand operated lift trucks speed storage

You can use them anywhere. Hydraulic and mechanical hand lift trucks, stackers, handy hoisters, working-height lifters and portable cranes multiply manpower and make vital storage and handling a profitable pleasure. Three booklets isolate each application and by means of specs, charts, cutaways and diagrams present a case for mechanically and hydraulically operated lift equipment. Three types of pallet racks, as well as drum racks, are completely detailed to give you aid in storage problems. **Lewis-Shepard Products, Inc.**

. . . for your copy, circle No. 172

### Conveyor belting engineering guide

This 24-page guide was prepared to give you engineers, step-by-step, the basic essential data necessary to calculate tensions involved in the average conveyor belt. Weight of materials, belt capacities, lift and incline angles, horsepower factors for various widths are considered in chart form. A note in front of the manual warns that it should not be used to develop the tensions involved in a conveyor where every phase—such as tensions necessary to limit sag between idlers, etc., must be considered, but it tells where such information can be found—in a second 22-page booklet, also available, on Conveyor and Elevator Belting. You'll want both of them. **Raybestos-Manhattan, Inc., Manhattan Rubber Div.**

. . . for your copy, circle No. 173

These are both 5 hp motors!



## 60% shorter— but with radial air-gap design!

**New Louis Allis Pancake Motor preserves all the advantages of conventional motor construction**

The new Louis Allis Pancake Motor is your solution to trouble-free power in any space-cramped motor application. The Pancake is a remarkably short flange-mounted motor — up to 60% shorter and 33% lighter than standard motors of the same rating! And it is built in *conventional* radial air-gap design!

It's done by an ingenious forming process which literally compresses the end coils of a conventional radial air-gap motor into an exceptionally short length. The result is a compact, light motor ideally suited for horizontal or vertical mounting on machine tools, roof ventilating fans, or *any* close-quarter installation where space is a critical design factor. What's more, this is achieved without sacrificing a single desirable characteristic: the stator still contains the same iron and copper as standard Louis Allis motors . . . standard

SM-101

NEMA service factor is maintained . . . high insulative values are retained by using proved Louis Allis varnishes and new insulating techniques . . . over-sized pre-lubricated bearings are used to guarantee long bearing life . . . and the entire motor is enclosed in an industrial-type cast-iron housing designed to shrug off abuse!

The housing and flange are cast in one piece: this permits extra-accurate internal machining which extends bearing life and reduces noise levels to a new low.

Investigate the Pancake Motor through your local Louis Allis District Office. Sized from 1 to 15 hp, at 1800, 1200, and 900 rpm, in open drip-proof and enclosed non-ventilated or fan-cooled enclosures. Write for Bulletins 2100 and 2150 to the Louis Allis Co., 438 E. Stewart St., Milwaukee 1, Wis.

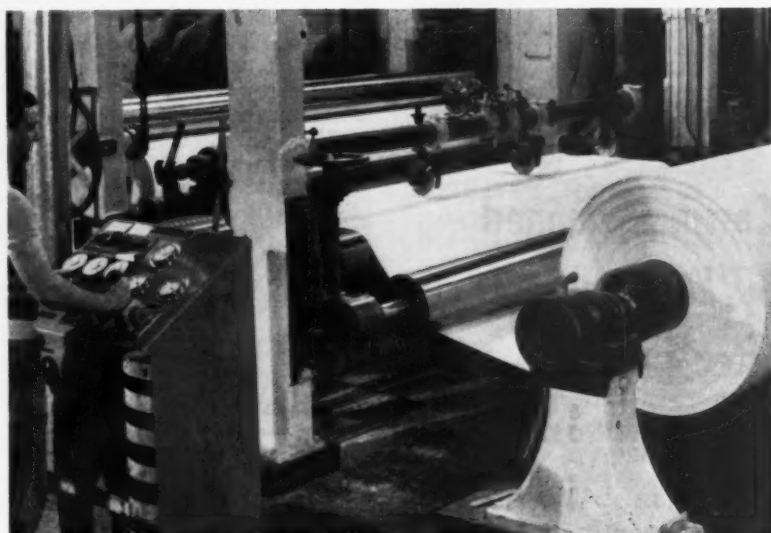
## LOUIS ALLIS

MANUFACTURER OF ELECTRIC MOTORS AND ADJUSTABLE SPEED DRIVES  
BURLINGAME • LOS ANGELES • PHOENIX • PORTLAND • SEATTLE • DENVER • SALT LAKE CITY

... for more details, circle No. 23 on Reader Service Postcard  
WESTERN INDUSTRY — August 1958

selected production and maintenance ideas for Western plant operating executives

## Carbide cutting paper slitters eliminate dust, smudge problems



Paper whipping through at speeds up to 2,000 fpm. is cut into strips by six steel slitting knives shearing against six Carboloy slitters on the underside of the paper. By using this method, cut-paper dust which may smudge ink, is eliminated.

**DUST FROM** cutting paper during manufacture, unless carefully controlled, can result in such problems as ink smudging or spotting during printing.

One company has solved this problem by using Carboloy cemented carbide cutting slitters on winding machines . . . and they've picked up a bonus in reducing machine time.

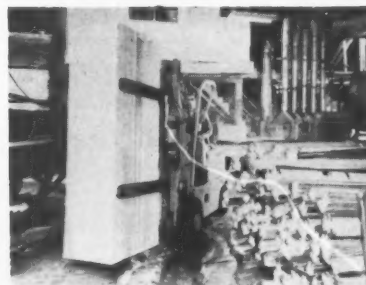
As paper whips through winders at speeds up to 2,000 fpm., it is cut into strips by the shearing action of six steel slitting knives shearing against six Carboloy slitters on the underside of the paper.

Spring-loaded to provide constant tension, each knife overlaps its driving slitter by about 3/64

in. Too much overlap would create excessive dust from the shear, just as a duller knife or worn slitter would fuzz the slit edge of the paper.

Original steel slitters lasted only two or three months before regrounding, while Carboloy bottom slitters have been in use two years and still show no visible wear.

As for maintenance, consider the savings in downtime. Previously, with steel slitters, it took anywhere up to an hour to replace knives. As carbide slitters haven't needed replacing, savings in production stoppages have been enormous.



## Uperder attachment takes backstrain out of plywood handling

**THE BACKSTRAIN** has been taken out of handling plywood panels at U. S. Plywood's Shasta Div. plywood plant at Redding, Calif. — and a fork lift's responsible.

Equipped with a hydraulically operated upender attachment, the fork truck moves panels between five rough patch stations, two sanders, panel sawing, one branding and plugging station and the storage and shipping area.

At rough patch stations panels have to be turned for patching operations on both sides. Previously this was done manually, one panel at a time (and with panels weighing 80 lb. each).

Now, in seconds, panels are turned 40 at a time by the fork truck attachment. The device consists of two pairs of forks mounted on a revolving plate. One pair of forks slides under the load in the conventional manner, while the second pair clamps down on top of the load under hydraulic pressure. Enough squeezing force is exerted to hold the load while it is being turned.

An additional advantage of the



upender attachment is that it permits loads to be carried vertically rather than horizontally. Often carrying panels 8 ft. long, the truck operates in an area 60 by 120 ft. filled with machinery and stock piles. Vertical carrying makes this possible.

## Medical-type unit used to inspect hard-to-see areas

**PROBLEM** . . . how to inspect the inside of a sealed wing on the world's first supersonic bomber?

Frank W. Davis, chief engineer at Convair's Fort Worth plant, recalled that a doctor uses a gastroscope and a bronchoscope to view the stomach and lungs of a patient. If an instrument slender enough to pass down a person's throat could be adapted to pass through a bolt-hole in the wing, the problem might be solved.

Letters were written and a search began. Although clinics failed to turn up an instrument that could be used, it was found that the principle was good.

Finally, experimental model borescopes were received from two firms, American Cystroscope Makers, New York, and Plummer and Kershaw, Philadelphia.

The precision-built viewers contain an internal lens system. The eye-piece provides a greatly magnified view of objects seen through the tiny objective lens on the other end, which is small enough to be covered by a pencil point.

A borescope of such length had never before been constructed with such a small diameter . . . but the problem of how to get enough light inside the tomb-like wing still existed.

Because the borescope would be used for viewing inside fuel tanks, a bulb that would cause sparks could not be used. It meant an outside source would have to be piped in.

By using reflectors, condensing lenses, a hemispherical prism, and a light-conducting quartz rod, it was found that light could be reflected from a 50-watt bulb and focused on the end of the quartz rod, where other lenses and a prism shine it where needed.



This Wheelabrator Super Tumbblast with automatic timer cleans parts perfectly.

## Castings cleaned by Wheelabrator after 150-mile trip

**WHEN CASTINGS** have to be shipped 150 miles between cleaning and machining, perfect cleaning is essential.

Pacific Southern Foundries, Inc., Bakersfield, Calif., faced exactly this situation in production of cast steel high-pressure valve bodies and parts used in petroleum refineries.

Valves range from ½ in. diameter to 20 in., and the largest cleaned weighs about 2,300 lb. Each casting is cleaned three times to safeguard against shipments of imperfect units that might cause machining problems.

Two airblast rooms working around the clock cleaning larger castings and a batch-type blast mill for smaller work were incapable of keeping up with production. And operating costs were high due to manpower requirements, maintenance expense and cleaning room bottlenecks.

The problem was solved with the installation of a 28-cu. ft. Wheelabrator Super Tumbblast with automatic sequence timer

system to provide a high degree of automation in cleaning operations. So far, about 60% of the total cleaning load has been assigned to—and successfully handled by—this machine.

Average hourly production rate is 8,750 lb., or a total production of 70 tons in a 16-hr. day. Manpower requirements have been cut 1/3 and reduction in operating time has brought a substantial savings in replacements.

## Unitized loads bring increased handling speeds up to 300%

**INCREASED HANDLING** speeds up to 300% have been announced by a Western shipping firm—through a system of unitized loads.



Allowing packages to be handled in unitized load form from origin to destination, Expend-a-Board pallets are built of heavy plywood trim.

Using the Expend-a-Board pallet, jointly developed by Encinal Terminals, Alameda, Calif., and Weyerhaeuser Timber, the system permits packaged cargoes to be handled in unitized loads from point of origin to destination with a minimum of effort plus savings all along the line.

The pallet's a new type of construction. Through use of heavy plywood trim, a unit has been made that's cheap enough to discard and yet rugged enough for reuse or resale.

Basically it consists of four 2 x 3 in. fir stringers with a sturdy upper deck of 11 strips of ½ in., ⅝ in. or ¾ in. plywood trim, and a bottom deck of six similar plywood trim pieces. They're assembled by General Box Distributors, a subsidiary of San Francisco's American Forest Products Corp.

And prices for standard boards are a drastic reduction over old type pallets.

## Portable displayers easy to build—easy on your pocketbook

**PORTABLE DISPLAY UNITS** in either single or multiple form can be built for sales meetings, various types of exhibits and demonstrations by utilizing materials available at any lumber yard. They also can serve as portable partitions.

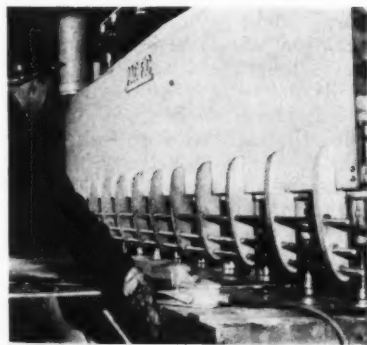
Items needed are 1 by 2-inch lumber framing,  $\frac{1}{8}$ " Masonite Duolux "Peg-Board" panels and ready-to-use metal fixtures and metal legs designed for this use.

Standing 6' 8" high, exclusive of the legs, each panel is 2' 6" wide and offers approximately 23½ sq. ft. of display area, as "Peg-Board" is used to face both sides of the framing. For heavy-duty service, with great concentrations of weight, the  $\frac{1}{4}$ " panels should be used, say engineers at Masonite Corporation.

When a series of panels is desired for a portable display wall, a 2 by 2-inch top plate is recommended to give the ensemble necessary rigidity. Panels should be notched to receive the metal legs.

The panels may be obtained with a factory primecoat of paint. One additional coat will complete the finish.

## Hydraulic shear allows one operator to do work of four



Finger-tip control by one operator brings this hydraulic shear into position for multi-cutting action.

**ONE OPERATOR** can do the work of four in fast, simple handling and precise positioning of steel plate—and his secret lies in his use of a hydraulic shear.

A unit presently in use at Burrard Dry Dock Co., North Vancouver, B. C., is really proving its worth.

Variable speed, hydraulically powered back gages are accurately and promptly set for desired position of cut. Accuracy is double checked by inching the knife down to the chalk line before cutting.

Shear is manufactured by Pacific Industrial Mfg. Co. of Oakland.

## Sintered bronze filter keeps out tiniest brass chips

**USING HIGH PRESSURE** cylinder gases without a regulator is like flying a plane with one wing ready to drop off—dangerous. Oxygen is commercially compressed at pressures up to 2,400 psi., and couldn't be used without reducing it considerably.

That's where the regulator fits in. And while the Oilite sintered bronze filter appears to be but a minute part of a regulator assembly (made by the National Welding Equipment Co., San Francisco), it's an essential one, as even the tiniest brass chip, if not filtered out, could damage the regulator seat.

Other filters have been found to be inflammable; some absorbed moisture which in turn inhibited the free flow of the gas through the filter. Some were hygroscopic (held water chemically and deteriorated and were difficult to replace).

Within the broad field of pneumatic tools, a filter element is placed ahead of the valves on jackhammer to protect the fine orifice from damage.

Oilite sintered bronze filters, manufactured by the Amplex Div. of Chrysler and distributed in Western states by Kingwell Bros., Ltd., San Francisco, are units you can use in your plant.



Specially designed outlet conveyor carries strip steel to Ross carrier.

## Skelp, strip steel handling's easy with conveyor unit

**HANDLING COILED** skelp and strip steel is no easy matter—except at a plant which uses a specially designed conveyor.

This is the story of how transportation of the product of a new 44-in. hot strip rolling mill has been fast, easy and economical.

The new system involves a specially-designed outlet conveyor at the strip mill, use of "over-the-load" carriers for pickup, transport, and laydown of coils, coil storage areas or depots adjacent to the finishing mills, and a simplified system of accounting which permits ready identification of coils for scheduling and inventory purposes.

In addition, a new plant roadway was built from the strip mill to the south mills area where the finishing mills are located, establishing a straight line carry from the strip mill to the Electricweld and continuous-weld pipe mills.

Strip in individual coils weighing on an average about 7½-ton is deposited on the conveyor at ground level in three-high, 25-ton groups.

## BOOKS—to aid your know-how

*Some books are to be tasted, others to be swallowed,  
and some few to be chewed and digested.* BACON.

**T**HE BOOKS reviewed here are to be tasted, swallowed, chewed AND digested. They're ones that have been selected by WESTERN INDUSTRY editors as containing the type of information which will be of practical use to you, in your plant. Don't expect to flip through them. If you're planning on reading the table of contents then putting the rest of the book aside, save your money.

But if you do believe that a library is more a necessity than a luxury . . . and if you are thirsty for the type of reading that will, at the same time, entertain, stimulate ideas of practical value and titillate you to delving further into finding how the detailed research of experts can be applied to your industry—then read on.

### **Motion and Time Study**

Ralph M. Barnes

Mr. Barnes is an acknowledged leader in the field of industrial engineering. At present he is professor of engineering and production management at the University of California, Los Angeles. But during his career he's been associated with such organizations as: Bausch and Lomb Optical Co., the Gleason Gear Works, Armstrong Cork Co., La Crosse Rubber Mills Co., and Eastman Kodak Co. in both New York and London. Consulting assignments have taken him to Norway, Sweden, Spain and Mexico, so there can be no doubt as to the extensiveness of the background from which he writes.

In this new, revised edition, Dr. Barnes sticks to his original purpose of presenting the basic principles that underlie the successful application of motion and time study. Illustrations and practical examples give the text added dimension.

Five chapters deal with: **Motion study, mechanization, and automation; mechanized time study and electronic data processing; systems of motion time data; work sampling; evaluating and controlling factors other than labor, and multi-factor wage incentive plans.**

The industrial use of pulse rate as an index of physical activity is detailed, and the section on time study has been enlarged in this revised edition by the addition of new material on statistical

procedures, as well as information on auditing of methods, time standards, and wage incentive plans.

All known systems of motion data are outlined and four are described in detail, including complete tables of motion-time data for each.

The author has used the results of his industrial engineering surveys as a guide in presenting and evaluating the most widely used methods and techniques of this country. And they're presented in such a digestible way that tasting, swallowing and chewing will be a gourmet's delight . . . as well as a practical self-investment. **John Wiley & Sons Inc., \$9.25.**

### **High-Talent Manpower For Science and Industry**

J. Douglas Brown and  
Frederick Harbison

Here are two essays by distinguished experts in the field of industrial relations. The author of the first, J. Douglas Brown, Dean of the Faculty, Princeton University, has spent over 30 years in the study of American industrial relations and manpower problems.

Frederick Harbison, author of the second essay, is Director of the Industrial Relations section of Princeton University. After a long study of the American scene, he has had the opportunity to analyze on the ground of manpower problems abroad.

In the introduction to their book, both authors stress the

emergence of the Twentieth Century as the Age of Science. Despite the rapid development of the mechanical and industrial arts, it was not until scientific investigation replaced mechanical ingenuity that the change of pace in our material way of life accelerated to an almost explosive speed.

It was science that made two world wars frightful . . . it was science that helped repair the losses of war. A voracious appetite has been created for scientists and with it has grown a shift in demand from the production of ideas to discovering new sources.

Because the source of ideas is human and must be discovered, nurtured, motivated, and sustained under circumstances which require the highest arts of social and intellectual cultivation, when it is finally ready to bear fruit, provisions must be made to ensure its proper usage.

The authors believe that the creative scientist or engineer is perhaps the most universal man in the twentieth century. They feel it is then only reasonable to suppose that his development should respond to similar measures in any part of the world.

The two essays entitled: **Considerations in the Determination of an American Policy, and The Development of Human Resources in the Newly Industrialized Countries**, are intended to test this thesis.

By an examination, in parallel, of the problems faced in America and in the newly industrialized countries in the development of high talent for science and industry, the problem is presented in its many varied aspects.

Conditions affecting the demand for and supply of high-talent manpower . . . problems and policies of corporations in enhancing their "seed corn" talent . . . the task of colleges and universities in the education of "seed corn" talent . . . and the place and function of government in this development, are items dealt with skillfully by J. Douglas Brown.

Mr. Harbison concerns himself with the aspiration to industrialize . . . some underlying propositions and the development of strategic human resources.

From the first word of the first essay it is apparent that both writers know their subject as well, if not better, than anybody in the field. The ideas they present and the questions they raise (and subtly answer) are not limited to any level of management.



The development of high-talent manpower for science and industry is of universal concern, and one especially vital to the United States. If such talent is not found, or is misused, the progression of this country in years to come may very well slow to a walk or, heaven forbid, follow a reverse direction. **Industrial Relations Section, Princeton University. \$3.00.**

### The Development of Manufacturing Industry in the State of Washington

William Wolman

Mr. Wolman completed the research for this book while serving as a Research Associate in the Bureau of Economic and Business Research at the State College of Washington, where he is presently an assistant professor of economics.

The book represents what is probably the most comprehensive study of the Washington manufacturing economy that has been attempted to date.

It includes a dissection of the state's locational background, the structural change and growth patterns in its manufacturing economy, and a discussion of the comparative productivity of manufacturing in Washington.

A major purpose for the investigation, according to the publisher, is to present the historical record of individual industries in the state. Beginning with the year 1899, data is presented showing the rate of growth of each manufacturing industry. Then the growth of each industry is compared with its expansion in the nation as a whole.

Washington's locational background; its comparative position with respect to the size of markets, labor costs, energy costs, and transportation costs is evaluated.

What is its value?

If you're planning on making a move, it's going to be valuable to know the economic structure of this Pacific-Northwest area. And to those of you interested in the problem of regional economic growth, it's a detailed and very readable case-history of a progressive state.

Bureau of Economic and Business Research, State College of Washington.

### Automation in Practice

S. E. Rusinoff

As a practicing engineer, edu-

cator, and author, Mr. Rusinoff has had unique opportunities to both observe and participate in the development of modern manufacturing processes.

Proof of the advantage the author has taken of his varied experiences is well demonstrated in this book on Automation in Practice.

It's a very practical work devoted to industry's latest and most significantly technological break-through, as well as bringing together for the first time the methods and machinery of automated production in the metal industries.

The book begins with a lucid discussion of basic principles: Self-regulation; negative feedback; the theory of "closed loop" control systems, etc. It proceeds to concrete applications of these principles in the major type of control devices employed in today's automated and semi-automated plant.

Following chapters are devoted to the use of automatic equipment in virtually every area of metal production.

The publishers state that the specific intent of this book is to provide an integrated survey of the latest automation techniques



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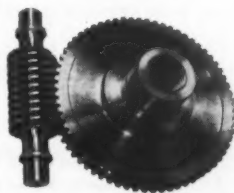
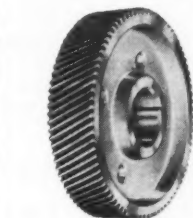
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as they are actually applied in the various manufacturing processes. Certainly, the emphasis in the book is on practice.

The material is treated in terms of particular processes rather than in terms of particular industries or particular products. Consequently, it gains the advantage of generality while retaining the benefits of discussing practical applications.

Furthermore, there is no process or technique described in this book which has not been a successful solution to a particular problem or group of problems in manufacturing. Automation is dealt with in terms of the three basic functions of production. **Material handling, processing, and quality control.**

The first five chapters concern the basic principles of automation controls insofar as they are relevant to manufacturing processes. Specifically they deal with the implications of automation, the principles of feed-back control loop, and with basic devices for effecting hydraulic, pneumatic, electric, and electronic control functions.

The succeeding eight chapters are approached from the point of

view of particular manufacturing processes, such as metal working, metal cutting, pressworking, joining, heat treating, casting, and production of ferrous and non-ferrous metals. The final chapters deal with devices and systems for achieving automatic inspection and quality control in manufacturing processes.

Metal tradesmen, industrial technicians, quality control men and many others concerned with modern manufacturing will find this lucidly written, superbly illustrated book will provide them with a wealth of professional know-how in the technique of automated production. **American Technical Society, \$6.50.**

### Practical Plant Protection And Policing

B. W. Gocke

The field of plant protection is rapidly becoming a major industry in itself.

Large industrial plants have security organizations numbering hundreds of personnel, and modern business executives realize that the margin between profit and loss—between success and

failure—is often determined by the care with which management watches activities that drain substance from the company.

Loss of lives and property from fires, theft, accidents, and various types of disasters can be minimized if the proper organization and planning are brought to bear on potential security problems before they become actualities and get out of control.

A good place to start is by reading this book.

Written as a guide for security personnel engaged in the profession of plant protection for business and industry, the author, presently Instructor in Industrial Plant Protection at the University of Southern California, has produced a book of general value to everyone concerned with plant administration.

By analyzing the various factors involved, simple and easy to understand methods and rules are detailed to show how the drain on your operation can be stopped.

The book explains in everyday language what is involved and how to correct harmful situations. Sections deal with: Analysis of the different factors involved in plant protection . . . primary re-

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quirements for the physical security of plants . . . factors involved in controlling access to plant premises by employees, visitors, contractors, vendors, etc. . . why theft is a major problem in most plants, and how to control it . . . a study of the qualifications and duties of a plant guard, rules of conduct, use of gun, regulations, etc. **Charles C. Thomas.** Price not listed.

### General Management Series . . . No. 184 Small Business: Problems and Prospects

The material in this 42-page booklet was presented at the General Management Conference of the American Management Association at Los Angeles in 1957.

In it are contained four talks: Operation Bull's-Eye, long range planning in a small company . . . Growth Companies, problems and funds . . . Smaller size, competitive hindrance or help? . . . A report on the small business outlook.

Author of the first section, **Milton J. Shapp**, began his business career as sales engineer for the Radiart Corp., later becoming the company's Eastern sales manager. In 1938 he founded a manufacturer's representative firm specializing in electronic equipment, and after the war, founded Jerrold Electronics Corp. Since that time he has served as the company president.

Mr. Shapp has put into effect a plan which he calls organization in motion—target bull's-eye. The center of the bull's-eye represents present business. Products are made, sold and shipped to customers.

But because companies must plan for the future, the trick is to find ways of bringing new ideas, products and methods into the bull's-eye area as soon as possible. It is with this in mind that the author presents his attitudes and ideas.

Each of the essays is valuable reading and the brevity of the entire booklet makes it the kind of publication you could keep on your desk and read in those few spare moments that sometimes come between jobs. **American Management Association.** No price listed.

### Parolees and Payrolls

Arthur F. Lykke

This is a factual account of the problems involved in the develop-

ment of jobs for inmates being released from penal and correctional institutions, and of helpful steps which may be taken, and programs which may be set up toward solution of these problems.

Mr. Lykke talks directly to prospective employers as well as others interested in the employment and readjustment of convicted offenders who have completed their sentence. He relates, with actual case histories to illustrate problems and their so-

lution, the story of the man with a prison record and you, the prospective employer.

The work covers three major fields . . .

The existing attitudes and prejudices of employers, labor unions and other community organizations, and the roles they're called upon to play in development of jobs for the inmates released.

Secondly, the value of educational and trade training programs in penal institution, and an out-

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75-175 DC	85-225 DC
125-350 DC	170-375 DC

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line of steps which may be taken in the development of an intelligent and productive job-seeking program. An entire chapter is devoted to the controversial question facing every offender seeking employment—to reveal or conceal his criminal record.

The third field deals with the initial period after the inmate's actual release and covers the job-seeker's personal interview with employers, and problems and obstacles to be overcome during this first difficult and crucial period.

At first glance, readers may feel the book was directed toward about - to - be - released prisoners, and has little or nothing to do with industry.

Nothing could be further from the truth.

There is even more value to the work than giving you a clear picture of your social obligations. It provides a picture of how these men with prison records can be, if given the chance, a valuable part of your production pattern.

Many of them have exceptional skills to offer, skills which, if put to the right use, cannot only give them a firm base upon which to build a new life for themselves, but in so doing bring profit to your operation. **Charles C. Thomas. No price listed.**

## Moving

(continued from p. 31)

of in-process parts . . . 3,000 pans of stores parts . . . and 10,000 tool and dies."

Lots of equipment weighing up to 17 tons.

Here's the story of how they moved the heavy stuff:

As most of the equipment was top-heavy, they decided to put skids under it to stabilize the base. The machine was raised by a tow

jack and skids (made from 4x6-in. used lumber) were put underneath and lagged by bolts.

Now they were ready to be picked up by fork lift (4, 6 and 10,000-lb. capacity were used) and carried to trucks waiting by exits (one natural one and another 20-ft. opening that had to be made in the plant). Heavier items were placed on low flat bed trucks. Other pieces of equipment could be hauled on five-ton trucks.

In the case of a 17-ton punch press, Jerry explains: "It was too heavy to be moved by fork lift so we took off the back shaft and clutch mechanism. Then, using an Austin-Western telescoping crane, the press was eased over on its side and lowered on skids equipped with rollers. It was then wheeled out and hoisted by two lift trucks on a low, flat bed truck."

How about some of the other equipment? Tote pans were loaded on pallets. Then fork lifts were used to carry the pallets to trucks.

Raw material in the form of round stock was placed in open-end nesting pans that would serve as their new storage containers. Pans were loaded and unloaded by bridge cranes.

All equipment was tagged like that in the previous move so it could be wheeled to its new destination.

Now another pre-installation feature:

Jerry points out: "Taking advantage of our move, we knew we could reduce the noise transmission and improve the set-up of our machines by placing them on compressed felt mounts (Unisorb), and vibration mounts (Barry, Robinson and Korfund). By setting these machines on mounts, leveling time was reduced and bolting eliminated . . . and a lower level of noise was guaranteed in the new plant."

## Pre-installation



**ABOVE**—Jerry Yonke, Marchant industrial engineer, shows the pre-installation features of common drops for electricity, air, oil, etc. These drops are only a few inches from where the machine is to be installed . . . allowing for quick, easy installation with flexible conduit. **BELOW**—Jerry kneels beside the vibrators on which equipment was placed. A few turns of the leveling screw and the machine is ready for operation.



Any other advantages in the new move? "Yes!" exclaims Jerry. "We improved every operation where possible. This particularly applies to material handling, work flow, power utilization, etc. Whenever a move is planned, be sure to build the latest and best features into your new plant."

Marchant believes it has accomplished this and taken advantage of this once-in-a-lifetime opportunity. And if moving is a jigsaw puzzle . . . all pieces were numbered and fitted together smoothly and exactly in this case.

The only headache might have occurred when the Marchant engineers outsmarted themselves. Their moving was completed ahead of schedule.

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## —Today's best manuals on welding—

*yours for the asking . . . use postcard, p. 75*

**Dear Joe:**

Did you know there's a new welding process out that'll let you weld without flux or gas? And that LP-Gas is a coming thing in welding?

Yep, I was reading about these the other night. And in looking over some of the other latest manuals on welding I ran across some interesting items: a new mechanical squirt welder . . . a whole range of portable, gasoline driven welder/power plants . . . a new vest pocket guide to welding . . . and power supplies that really give you the ultimate in welding control.

You know, I thought I knew about welding until I started going through these books. Guess I didn't realize that new things are happening each day, and that you've got to keep up your reading if you want to be on top of the picture.

That's why it might be a good idea to check this list of the latest welding manuals that follows this letter. They're yours for the asking . . . just circle the key numbers on the postcard, page 75. There's sure a lot of information here that should be in your files!

Your pal,  
**Will**

### **Gasoline driven welder/power plants**

Need welding and power away from your regular source of supply? Then this four-page booklet has the solution for you. The booklet details the Roustabout, Big Rig and Fireball . . . all three of which will enable you to weld when and where you want. The Roustabout is a two-in-one deal, featuring a d-c. arc welder and an a-c. power plant plus 1 kw. of d-c. power while welding. The Big Rigs give you three-in-one: an a-c. arc welder; a d-c. arc welder; and an a-c. power plant plus 1 kw. d-c. power while welding. The Fireball is four-in-one: an a-c. arc welder for metallic arc welding; a d-c. arc welder for metallic arc welding; a-c. or d-c. arc welder for tungsten inert gas welding; and an a-c. power plant plus 1 kw. of d-c. while welding. You can get further details and specifications by sending for this booklet. **Miller Electric Mfg. Co., Inc.**

... for your copy, circle No. 190

### **"The most flexible welding system in industry"**

Recently off the press, this 20-page booklet introduces the new manual Aircomatic process. The Aircomatic process is a versatile process used by all industry. In this booklet you can learn about a new concept in the design of Aircomatic equipment . . . that meets the expanding needs of industry. The new concept provides a completely new type of wire feeding system to handle the broadest ranges of wire types and sizes—from the finest to the heaviest. This new manual Aircomatic equipment is designed for long, trouble-free service. It has extreme versatility made possible by the ability to select various combinations of the five items comprising the basic equipment. This equipment is described thoroughly in this manual. **Air Reduction Co.**

... for your copy, circle No. 191

### **180-page welding data book**

Close to a half-million copies of this famous 180-page, pocket-sized manual have been given to welders all over the world. Now in its 1958 edition, it's crammed with welding information on virtually all metals, as well as a fully-indexed section of over 150 different alloys, each fully explained. **Eutectic Welding Alloys Corp.**

... for your copy, circle No. 192

### **Your guide book to electrode selection**

Every electrode for your needs must be covered in this complete 22-page directory. And complete details on each electrode are included. By going through this book you'll be able to find: conformance to specifications; mild steel and low alloy electrodes; special chrome-moly electrodes; stainless steel electrodes; aluminum bronze and phosphor bronze electrodes; aluminum electrodes and gas rods; steel and gas rods; electrodes for cast iron and special applications; hard surfacing electrodes; submerged arc wire. **Metal & Thermit Corp.**

... for your copy, circle No. 193

### **New concepts and process**

Lincoln Electric is mighty proud of its new automatic arc welding process—the Innershield . . . and its new concept of submerged arc welding with the "Mechanized Squirt Welder." Each of these has a just-off-the-press four-page description. The Innershield offers faster speeds, welding without flux or gas, light slag and quality welds on light metal and high production jobs. The "Mechanized Squirt Welder" offers the precision of automatic welding with the flexibility of manual welding and reduces costs while raising welding quality. **Lincoln Electric Co.**

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### **50-page engineering report**

Here's a 50-page engineering report devoted to "Tentative Design Standards for Resistance Formed Welds in Mild Steel." Line drawings are used extensively to illustrate various piece-part combinations, e.g., solid bar to round stock, tube to tub, round on end to flat stock, etc. Total secondary amps., current densities, time in seconds, area fused in square inches and other information are contained on numerous and comprehensive graphs. Also included are tabulated data and formulas. **Skiaky Bros., Inc.**

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### **"Big 98" combination welding and cutting outfit**

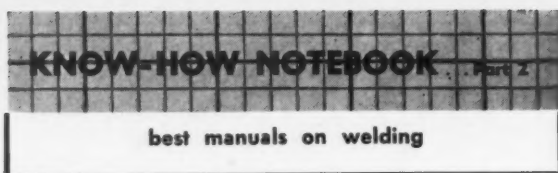
What's the "Big 98"? You can find out from this four-pager which pictures and explains the performance of this outfit which welds, cuts, brazes, heats and solders. You'll be interested in finding out more features of this outfit . . . like the fact that the torch with cutting assembly weighs less than two lbs. **Smith Welding Equipment Corp.**

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### **A booklet full of air-acetylene appliances**

Whatever your metalworking requirements—soft soldering, silver soldering, heating, brazing, welding, cutting—you can choose a combination to meet your needs exactly from this 36-page manual. Contents include: gas tanks, outfits, leak detectors, torches, outfit make-up guides, time for soldering sweat-type fittings, soldering irons, torch stems, torch handles, regulators and gages, adaptors, accessories, tank handles, hose and fittings, wrenches, valves, etc. The section on LP-Gas appliances should be especially interesting. **Linde Co.**

... for your copy, circle No. 197



### Vest pocket guide to welding equipment

If you're the kind who likes to carry information in your vest pocket, then try this guide book for size. It will snuggle right in your pocket and can come up with the answer for welding equipment you need. The pictures show you what the equipment looks like and tables spell out the details. Yes, you'll be amazed at how much information you can jam in your vest pocket. P.S.—If you haven't a vest pocket . . . any other will do. **Victor Equipment Co.**

. . . for your copy, circle No. 198

### D-c. constant potential for multi-arc welding

Here are complete specifications on new 750 and 1,500 amp. d-c. constant potential units for multi-arc welding. The units occupy considerably less outside space than a group of single operator welding sets and enable the operator to adjust his heat from his work position, no matter how distant. Specifications include electrical construction and general features. Complete description is given for heavy and light duty welding jobs. **A. O. Smith Corp.**

. . . for your copy, circle No. 199

### Heliwelding for hard-to-weld metals

This 25-page manual puts down the facts on a rapid, inexpensive, efficient method of joining the hard-to-weld metals. The booklet tells how this is done by heliwelding—a tungsten arc welding process in which inert gas—helium, argon (or a mixture of both) shields the weld from contamination by the atmosphere. The process is ideal for nickel, stainless steel, aluminum, brass, copper, titanium, columbium, molybdenum, tantalum, beryllium alloys, cast iron, Everdur, Inconel, Monel and silver. The manual explains how heliwelding produces welds that—without flux or special preparation of the pieces to be joined—are so smooth and clean that (in most cases) no finishing is necessary. **Air Reduction Co.**

. . . for your copy, circle No. 200

### Applications from toys to railroad cars

The pictorial format of this 34-page brochure shows how resistance welding techniques are adapted to meet unusual fabricating requirements on a wide range of products—from toys to railroad cars—in virtually every industry. Also shown is how resistance welding is adapted to the production process, rather than the process to a resistance welder. Applications described include such resistance welding techniques as: multiple gun spot welding . . . multiple gun projection . . . mash welding . . . seam welding . . . cross wire welding, etc., with either standard or special welders. **Skiaky Bros., Inc.**

. . . for your copy, circle No. 201

### New concept of resistance welding control

Described in this 8-page brochure is a three-phase frequency converter featuring counter tube timing. It has been designed to combine the latest electronic developments into a single, integrated unit offering utmost precision, reliability, flexibility and ease of maintenance. The brochure details how this control gives you uniform timing, heat balance, welding heat . . . and many other unique features. Complete break-downs of components leave nothing to your imagination. **Weltronic Co.**

. . . for your copy, circle No. 202

### Multi-spot and projection welding machines

Packed into this 10-pager are details on 32 multi-spot and projection resistance welding machines. Facts include: end product, type of operation, production rate and associated material handling equipment. Products covered include automotive parts, appliances, precision instruments, electric motors and basic steel. The manual tells how special welders have features of automatic loading, and inspection; special welding techniques, spot, projection, or seam welds, resistance brazing or hot upsetting operations as required; automatic transfer; forming operations before or after welding, done in separate work stations; and automatic unloading. **Taylor-Winfield Corp.**

. . . for your copy, circle No. 203

### Controlled arc power supply

Interested in simplified, faster, more uniform semi-automatic or full-automatic welding? You can find out about it in this new brochure which describes how this fool-proof automatic voltage control eliminates variables in operation and reduces overall costs. Yes, it's a job-proven power source for automatic stud welding, submerged air, low current density welding, inert gas and hard surfacing. There's a question and answer folder that will give you additional information. Get the facts and see if it fits your operation. **Metal & Thermit Corp.**

. . . for your copy, circle No. 204

### Everyday welding guide for the foundry

This eight-page, fully-illustrated pamphlet shows how the metal casting industry is using up-to-date low heat input welding techniques to salvage defective castings from the re-melt pile. This guide also gives ideas for repairing damaged foundry equipment, such as flasks and muller plow blades. It should be on the reference shelf of all ferrous and non-ferrous metals foundries. **Eutectic Welding Alloys Corp.**

. . . for your copy, circle No. 205

### Handbook for welding low alloy high tensile steels

This 64-page reference guide is designed to acquaint you with the many types of trade names in special purpose low alloy hardness of steels and the proper electrode necessary to provide welds of 100% joint efficiency. Each chapter contains the various steels, their manufacturer, chemical composition, welding techniques and the recommended electrode for each type. **Alloy Rods Co.**

. . . for your copy, circle No. 206

### Principles and practices of resistance welding

Packed into these 30 pages is complete textbook information on resistance welding. Go through it from beginning to end and you can have your degree in welding. For the technically-inclined there are plenty of formulas . . . and for those who like drawings and pictures, you can have your information this way. Covered are these techniques: spot, projection, seam, three-phase, roll spot and flash butt. **Federal Machine and Welder Co.**

. . . for your copy, circle No. 207

### Pocket guide to electrodes

You'll have more than a pocket full of facts when you get this pocket-size electrode guide. Covered are these types of electrodes: cast iron, non-ferrous, hardfacing, stainless steels, special electrodes, low hydrogen, low alloy and mild steel. Indexes throughout will lead you right to the electrode you want. And when you get there you'll find complete specifications, preparations, procedures, techniques, etc. And how do you like that Airco hardfacing electrode comparison chart? It folds out from the back of this 66-page guide. **Air Reduction Co.**

. . . for your copy, circle No. 208

### Design data on welding equipment

This 20-page manual describes the process, shows typical applications, gives standard stud specifications, stud locating procedures, tensile-torque strengths, etc. on the Nelson stud welding method of end-welding studs or projections to steel. Pictures, charts, line drawings, and specification tables fill you in on all the facts. **Nelson Stud Welding Div. of Gregory Industries, Inc.**

. . . for your copy, circle No. 209

### 16 pages on flash-butt welders

This new 16-page bulletin gives you all the facts on the flash-butt welding process and outlines and illustrates types of clamping and flash and upset mechanisms. The manual illustrates (with emphasis on special features) 40 butt welders designed for specific application. Applications include the butt-welding of aircraft components, automotive parts, window frames and small electronic assemblies such as germanium diodes, etc. **Taylor-Winfield Corp.**

. . . for your copy, circle No. 210

### The right stud for the job

If you're going in for stud welding, then you had better have this 40-page manual. It details all studs available for the Nelweld method. Under each specification are listed these factors: length, thread, material, plating, annealing, weld fillet diameter and height. Charts, graphs and tables give you the pictorial view so you can tell at a glance what you want to know. **Nelson Stud Welding Div. of Gregory Industries, Inc.**

. . . for your copy, circle No. 211

### A "how to" operation manual

Ready . . . set . . . go through this manual to find out how to operate this welding or cutting outfit. Dramatic pictures carry you step by step to the promised performance. The booklet was printed primarily for the operator who may not be completely familiar with some of the safety procedures and general precautions that eliminate trouble in setting up an outfit. It explains the proper technique in lighting torches, how to effectively begin a cutting operation, and many other useful and important details. **National Welding Equipment Co.** . . . for your copy, circle No. 212

### A rundown on hardfacing wires

Look on the third page of this folder and you'll see a table that gives you the facts on the hardsurfacing wire for you. Subject headings include: type, size, alloys, use, properties, and welding properties. Also arranged in easy to grasp order are general instructions for the use of this wire. You'll find your answers as easily as you can flip the page. **Victor Equipment Co.** . . . for your copy, circle No. 213

### Synchronous bench welder control

You can get all the details of a compact bench welder control designed to meet the requirements of small bench welders or low capacity machines. This four-pager is laced with facts, figures and pictures showing how this unit can work for you. The booklet also tells you of the various setups and accessories available that will fit all types of applications. Ordering specifications and accessories are presented in table form on the back. **Weltronic Co.** . . . for your copy, circle No. 214

### Weldirectory of manual electrodes

The three green dots on these electrodes—for mild steel and low alloy, high tensile steels—can lead you to time and money saving. It's all detailed in this 12-page guide book which tells you how to select the right electrode . . . then goes on to give you the facts on the fast freeze group, the fast fill group, and the fill-freeze group. There's a special section on hard-to-weld steel and for slag-free welds. **The Lincoln Electric Co.** . . . for your copy, circle No. 215

### Stainless steel welding electrodes

Flick . . . and you're there. Just where you want to be in this well-indexed manual on stainless steel welding electrodes. Have any questions on stainless steel? Page 3 will tell you the answers. Want any facts on electrode coatings? See page 5. On the same page are suggested amperages for the best job. And the stainless steel electrodes neatly set down in tables should do the job for you. The tables include general description, typical physicals, typical deposit analysis, conformation and competitive types. **A. O. Smith Corp.** . . . for your copy, circle No. 216

### "You don't need an egg beater to mix gases"

. . . is the intriguing title of this colorfully illustrated booklet. It explains very graphically why it's not necessary to utilize individual mixers with National torches; why for safety reasons all National Welding Torches are of two-tube construction permitting vented handles which eliminate any possibility of a back flash, causing an explosion in the handle and resulting in burns to the operator. **National Welding Equipment Co.** . . . for your copy, circle No. 217

### Special and general resistance welders

Included in this six-page folder are press type spot welders, rocker arm spot welders, spot projection welders, special application welders, and seam welders. Types and models are illustrated and described. Also included are optional features. You can also find out about special resistance welding machinery such as the television tuner welder . . . and the spot welder for heavy duty high production service. **Banner Mfg. Co.** . . . for your copy, circle No. 218

### A handbook on hard-surfacing

If you ever have any questions on hard surfacing . . . you'll find the answer here. This manual supplies all the answers on hard surfacing for use in brick and clay, cement, coal mining, dredging, metal mining and rock products. Each subject is explored with simplified line drawings to lead the way. We bet there isn't an application missing from this manual—a handy one to have around when that problem comes up. **Victor Equipment Co.** . . . for your copy, circle No. 219

### Low temperature welding alloys for daily use

Maintenance welding savings can be enjoyed by every firm, from the small shop to the large plant. This six-page, two-color folder uses over two dozen illustrations and easy-to-read text to describe the vast range of equipment—from cast iron motor blocks and high speed steel dies to aluminum aircraft turbine coolers—that can be maintained in top working order. **Eutectic Welding Alloys Corp.** . . . for your copy, circle No. 220

### Hard surfacing data folder

Here's a hard surfacing file folder containing data sheets describing products for all types of hard surfacing applications . . . manual, semi-automatic, and fully automatic. Data sheets discuss a full line of hard surfacing alloys to cover most wear problems and provide information on specific wear conditions, hardness values of the alloys, welding techniques, amperage tables, chemical analysis and physical properties. **Alloy Rods Co.** . . . for your copy, circle No. 221

### The facts on oxy-acetylene welding

What don't you know about oxy-acetylene welding and cutting equipment? You'll find the answers in this handsome 44-page manual that covers the subject from adaptors to Y-connections. Line drawings, charts, graphs, and explanatory text spell out the details. And there's an outfit for every type of welding. With the guarantee and service facilities for this equipment you're assured of complete satisfaction. And that list of accessories and supplies will set you right up in business. **Linde Co.** . . . for your copy, circle No. 222

### Pipeliners cutting assembly with slip-in tips

All the facts on a completely new cutting assembly that will handle all the usual types of cutting encountered by most operators in production, maintenance or repair are contained in this four-page booklet. Especially useful is the Cutting Tip Information found on page 3. And the combination outfits featured on the back may be just what you're looking for. **Smith Welding Equipment Corp.** . . . for your copy, circle No. 223

### Induction heating for stress relieving

You can find out from this company's publications how cycle heating and resistance heating can be used in pre-heating and stress-relieving in welding. A new radiant "Heatcoil" has been designed for use with the Smith-Dolan system and brings new flexibility to the portable stress relieving of very large welded vessels section by section. **Electric Arc, Inc.** . . . for your copy, circle No. 224

### Sears Roebuck information on spot welders

This catalog is modeled after the Sears Roebuck idea. Lots of pictures and enough information so you'll know if the product is for you. Packed into the 36 pages are hundreds upon hundreds of spot welders, including bench, foot operated, etc. A full line of accessories is also detailed, including transformers designed for your specific job. **Eisler Engineering Co.** . . . for your copy, circle No. 225

### Modern methods for joining metals

This manual is worth its weight in pictures alone. The large, snappy pictures are masterpieces of art and descriptive science—letting you see at a glance how welding processes can work for you. Illustrated and described are heliarc, sigma, unionmelt and unionarc welding methods. The book will stimulate your ideas in creative engineering by showing inherent benefits of these welding processes. **Linde Co.** . . . for your copy, circle No. 226

### Automatic submerged arc hardsurfacing

Basic information on this process is set down in this 16-page application manual. Information covers the entire subject—from what it is to correct deposit to special considerations to general procedures to methods for calculating costs. Basic charts and graphs point the way . . . so if you're new at this process you'll not get lost. **The Lincoln Electric Co.** . . . for your copy, circle No. 227

### Colorful spot welders before your eyes

These booklets sure are colorful. Done up in bright red, blue, yellow, purple, each folder details a different type of spot welder. And each is colorful in its description, using pictures, specification tables, charts, etc., to get over the points. Among spot welders so described are foot operated, projection, rocker arm type, and others. The booklets will certainly brighten up your library . . . and your knowledge on this subject. **Acme Electric Welder Co.** . . . for your copy, circle No. 228





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**WESTERN INDUSTRY — August 1958**

# HELPFUL LITERATURE for the West's plant operating executives

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## Rubber for industry described in booklet

You use rubber every day . . . but how many of you know how it's made and the variety of applications to which it can be put? Sheet, molded and extruded rubber are subjects complex enough to fill a book. Here they're presented with crystal clarity and conciseness. Pictures of products about their everyday jobs, applications swinging from ski-lifts to rigid polyurethane foam will catch your imagination and set you to wondering how rubber can help you in your industry. **Goodyear Rubber Co.**

. . . for your copy, circle No. 250

## Automatic power scoop for safe, speedy handling

If you're interested in a one-man operation for unloading bulk material from box cars, take a look at this fold-out on an automatic power scoop. Complete control of scoop movement is located in the scoop handle. A dead-man switch-lever operates a normally open contact type micro switch which, when not depressed, actuates the free-wheeling feature of the clutch by reversing the motor, leaving the scoop under complete control of the operator. Diagrams of installations in operation . . . photographs and specs add crystal clarity to a money saving application **Alden Equipment Co.**

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## 23-page catalog lists adhesive specifications

Official U.S. government specs for a wide variety of adhesives, coatings and sealers are detailed in this fact-packed reference book. Construction of the folder is such that additions can be made as new facts are issued. It lists, in numerical form, military, army, and federal specifications, their definitions, and the corresponding adhesive, coating or sealer that meets these specifications. **Minnesota Mining and Manufacturing Co., Adhesives, Coatings and Sealers Div.**

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## 40 page bulletin describes steam-turbine generators

Cross section diagrams of each of four basic types of WA-Series steam turbine generators designed for condensing, non-condensing, condensing automatic extraction and non-condensing automatic extraction, are highlights of this 40 pager. Also described are such features as the stator, rotor, bearing, excitation systems, air-cooling and ventilation systems for units 2,000 through 15,625 kw. **Allis-Chalmers Mfg. Co.**

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## Screened catalog insures best janitorial supplies

Detergents show up on the balance sheet. Longer lasting floor polishes and janitorial supplies which do the job faster and more efficiently are just as much a part of your production team as 10-ton presses. Here, for the first time, is a fully screened 36-page catalog of janitorial products which have passed the most rigid specifications and performance tests. They carry the "Big E" (Easterday) trademark, a sign known and respected throughout the West . . . and one which will bring big \$avings to your operation. Soaps, cleansers, disinfectants, cleaning equipment and supplies are presented in clearly indexed fashion. And if you think you know all about floor care, take a look at page 20 . . . you'll learn something. **Easterday Supply Co.**

. . . for your copy, circle No. 254

## All about new brass plant for our Western states

We're getting bigger every day in the West . . . and the latest addition is a new brass plant at Newark, Calif., pictured in this 6-page folder. Rods and forgings produced in the plant, as well as welding rods, forging rods, brass pressure die castings, True Shaft boat shaftings, brass wire and special shapes, are all described. **Titan Metal Mfg. Co.**

. . . for your copy, circle No. 255

## Stainless steel wire detailed in new manual

The story of stainless steel wire is packed into this fact-filled 20-pager—and it packs a powerful punch. Mechanical properties, corrosion data, tables listing round wire heights, conversion of fractions to decimals and millimeters, as well as analyses of various types of stainless steel, are all here. Look at page 9 . . . that's the kind of laboratory data you should cut out and pin on the wall over your desk. **Stainless Steel Div., Jones & Laughlin Steel Corp.**

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## Custom gears described in colorful fold-out

Need a gear made to order for a special production problem? . . . here's a fold-out that describes a service you might be looking for. It's an inside look at **Johnson Gear & Mfg. Co., Ltd.**, a firm with over 50 years' experience in gear manufacturing and machine work. Pictures of on-the-job operations show how this firm is keeping pace with the needs of the West's growing industrial community . . . how their 100% inspection policy assures exact compliance with your specifications. A refreshing look into an operation that may mean added profits for you. **Johnson Gear & Mfg. Co., Ltd.**

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## All about transformers that stay in service

What do you know about distribution transformers? You've seen them and know where they're used in industry, but how about what goes on inside . . . and more important . . . how to pick the right one for your needs. This 42-page, picture-filled, chart packed catalog is designed to give you just these answers. Tables of voltage ratings, single phase, and three phase oil-immersed units, are just a few covered in detail. This catalog's full of the kind of detail you like to keep on file. Without it, your catalog collection is incomplete. **Hill Transformer Co., Inc.**

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### How to strip paint told in Oakite booklet

You can wave your paint stripping problems good-bye—after you flip through this booklet on four methods for making the job easy. It describes 12 different paint stripping compounds—alkaline, solvent, and solvent-acid—each designed to remove different types of paint. There's a discussion on the Hot-Flow-On method of stripping (flowing stripping solution through perforated pipe rake or shower head) and another on tank immersion. There's a section on the steam gun method, in which steam is combined with the stripper and flowed on the surface through a steam gun, and another on brushing the stripper on and allowing it to soak. Diagrams, specs and case studies add perspective to this guide to stripping paint. Oakite Products, Inc.

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### Production simplified by proper tube selection

Interested in the production of hollow parts? ... here's a technical folder designed to show how production can be simplified by selection of the proper type of mechanical tube. Included are industry tolerance tables for cold drawn and hot finished seamless carbon steel mechanical tubing. Each year a growing number of designers and fabricators of hollow cylindrical parts are becoming aware of the cost-saving advantages of tubing. Here's your chance to learn, too. The Babcock & Wilcox Co., Tubular Products Div.

... for your copy, circle No. 260

### Carbide throwaway inserts cut costly tool-grinding

Cost-cutting advantages of carbide throwaway inserts are detailed in this fold-out ... and if you're interested in better cutting at lower costs, reduced machine set-up and down time, increased production, and reduced cutting tool inventory, look on the cover. Inside are specs, charts and diagrams to really set you thinking, as well as complete price lists of inserts you may be likely to use. Pratt & Whitney Co., Inc.

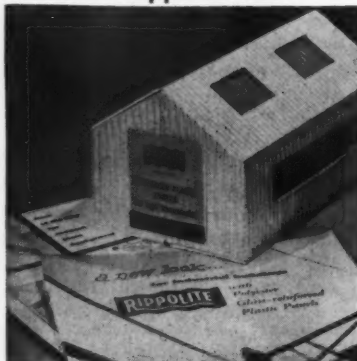
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### Micro-spray gun with adjustable air cap

An adjustable air cap that goes on from fine atomization to a heavy wet coat, is the arresting feature of the model P-45 micro-spray gun. Detailed on this fact sheet in a way that makes everything readily understandable, it is an ideal unit for applying multi-color as well as interior and exterior finishing materials with less air, less over-spray and more coverage. It's equipped with a special flip lever for using multicolor paint and obtaining varied patterns. The nozzle combination chart and parts list (complete with prices), will be of stimulating, practical value. M&E Mfg. Co.

... for your copy, circle No. 262

### Model steel building illustrates Rippolite use



This unusual mailing piece, simulating a model steel building, graphically shows the practical application of Rippolite plastic panels for skylighting. It's available to anybody requesting information, and specs are to be found on the bottom of the model. Rippolite Plastic Products, Inc.

... for your copy, circle No. 263

### Cyclone dust collector detailed in 8-page bulletin

Stamp collectors and butterfly collectors you've heard of—but what about dust collectors? You should have, they play an important part in industry. And if you want to catch up on latest developments in this field, flip through this 8-page bulletin describing high efficiency cyclone dust collectors. Detailed description of the various design and structural features of the cyclones, application drawings and illustrations and a detailed discussion of the numerous factors involved in cyclone performance and selection, will stimulate your thinking. The Ducon Co., Inc.

... for your copy, circle No. 264

### 40 photographs highlight complete check valve line

Check valves are something you can't afford to ignore—and they're so attractively brought to your attention in this colorful brochure, you'll enjoy learning. It shows the difference in construction of two basic types of check valves which prevent return or backflow through pipe lines—swing check valves recommended for liquid service where full unobstructed flow is desired. There are lift check valves for service with steam, air, gas or vapor lines, as well as illustrations and descriptions of bronze swing check valves with discs for screwed, solder or silver brazed joints. The Fairbanks Co.

... for your copy, circle No. 265

### Mobile ground power unit tests electronic gear

In-production testing of electronic gear is important—and there's a 4-page bulletin which details a 400-cycle mobile ground power unit designed specifically for this task. The unit converts commercial 60-cycle power to a precise 400-cycle output by means of a synchronous induction drive motor and an alternator. The Syncro-Spede drive motor maintains an exact 400 cycles regardless of changes in load or line voltage. Sensitive two-stage magnetic amplifier limits voltage variation to plus or minus 1% from 0 to 150% load. With 100% load change the voltage recovers to 2% of the pre-set value within .15 secs. The Louis Allis Co.

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### Metallizing makes news in complete catalog

Metallizing in all its phases is the subject of this picture-packed guide to an industrial process concerning you. Advantages of Rokide coatings over any other heat and abrasion resisting coatings are just an introduction to pictures of applications ... description of process ... and discussion of metallizing equipment. You might not be able to use the application on the inside spread, but there's bound to be one here you can profit by knowing about. Metallizing Co. of Los Angeles.

... for your copy, circle No. 267



### Automatic blending scale described in data sheet

This two-color fact sheet explains how a fully automatic blending scale receives, weighs, discharges and records granular materials up to 1/4 in., such as rice, coffee, sugar, salt, beans, peas, grain and plastics. Included is a discussion on many possible blending adaptations, and a detailed line drawing gives full dimensions. Specs, which include an hourly rate up to 10 tons, are detailed in eleven separate items. Richardson Scale Co.

... for your copy, circle No. 268

### 132-page reference book on filter engineering

It's thick and picture packed... the kind of reference manual you need... and it's one of the most complete ever compiled dealing with filters for the widest range of applications. Filters for lubricating oils, gasoline, jet fuels, hydraulic fluids, compressed air, gases, deicing fluids, air conditioning systems etc., are detailed with cutaway diagrams and specs to make understanding easy. A 14-page section in front with a brief history of the art of filtration; subject, quick-reference and numerical parts indexes; a discussion of particle sizes and basic filter media—all are in here, and more besides. Get it. Bendix Filter Div., Bendix Aviation Co.

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### Fact-packed manual on air conditioners

What is the Roll-O-Vent?... It's an automatic air filter that highlights the new line of AAF-Herman Nelson air conditioning units. And it's fully described in this 54-page manual. The Roll-O-Vent assures constant air delivery at all times, makes filter changing automatic, and brings major savings in maintenance costs. Nine pages of the bulletin detail components which may be selected to meet exact job requirements, and include such items as filter section, humidifier, face and by-pass dampers and mixing dampers. Coil selection information includes capacity tables, correction curves and sample calculations covering steam heating coils, hot water, chilled water and direct expansion coils. American Air Filter Co., Inc.

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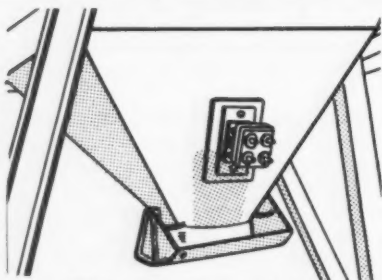


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### Hand screw machine featured in booklet

You know what it can cost to be faced with short production runs. A glance at this 6-page illustrated bulletin will stop your worrying. It details how the low-cost hand screw machine combines the time and cost saving features of rapid chucking and multiple tooling. Results? . . . low initial investment, low maintenance costs and power consumption, minimum setup and change-over time and small space requirements. The bulletin also includes a catalog listing, complete specs and a description of how to convert a standard Delta lathe to a hand screw machine. Rockwell Mfg. Co., Delta Power Tool Div.

... for your copy, circle No. 271

### New 1958 check chart for maintenance painting

The latest technical recommendations on selecting the right paint for maintenance problems are packed into the fourth edition of this well known check chart. Included in application recommendations are products based on many of the newest resins, such as hypalon . . . polyurethane . . . and Saran, as well as rubber and vinyl combinations. The chart is a standard reference work for maintenance engineers to compare how available paints will best solve the problem at hand. It outlines problems common to industry and presents a type of coating to solve such problems. The Wilbur & Williams Co.

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### Fact-filled 24-page catalog focuses on workholders

A complete range of workholders from adapters through vises including angle tables, arbors, chucks and magnetic chucks, are described in detail in this illustrated catalog. Charts, tables and specs carry you from pages of sleeves and sockets, to compound angle tables, cutter grinding fixtures and the widest variety of chucks. There's a page for your notes on the back of the outer cover—and after reading through this reference source, you'll have plenty to make. De Witt Equipment Corp.

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### New calculator aids users by fixing coil stock weight

What are the best coil weights to specify in ordering for work ahead, considering coil handling equipment available? The answer is provided by this coil weight and length calculator—and it's free to all users of coil stock. The inside and outside diameter of the coil, width and thickness of stock are all the user needs to know. Operation is in two steps: first shows the pounds-per-inch-width figure for any combination of I.D. and O.D. Step two uses the pounds-per-inch-width figure as a basis for instant indication of both the total weight and number of feet in coil. Aluminum coils can be figured by taking one-third of weight figures given and in figuring brass stock, 10% is added to steel weight figures. F. J. Littell Machine Co.

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### 25% more work capacity with Yale tractor shovel

Take the average industrial shovel and figure its work capacity—add 25% and you've got the Yale Y-18 industrial tractor shovel. This two-color, 20-page booklet discusses in detail such highlights as the tractor's fully automatic torque transmission (for easy operation and high acceleration) safety curve arms, 45-deg. bucket tip back for better loading and a full six-ft.-high dumping clearance. Take a look at pages 14 and 15 . . . there's a lot there you'll learn about maintenance . . . and the back cover spread is a quick reference to the full Yale line of industrial lift trucks and hoists. Yale & Towne Mfg. Co. . . . for your copy, circle No. 275

### Fact filled catalog on electric power motors

There's an index on the third page of this catalog with two columns of figures. One indicates where you'll find apparatus facts and the other application facts—on large induction motors, synchronous motors, generator sets, motor controls, etc. There are 36 pages of specs, pictures and diagrams which combine to present a mine of information about electric power apparatus. Electric Machinery Mfg. Co.

... for your copy, circle No. 276

### Guide to easy selection of refractory products

Written to aid design engineers and operators in selecting the proper refractory products for high temperature applications, this 24-page booklet is a real reference source. It is packed with technical data, tables, graphs, conversion charts, and other useful information. The guide to standard brick shapes on page 12 will be a great help to almost all engineers who are likely to use brick around their plant. Norton Co., Refractories Div.

... for your copy, circle No. 277

### Nordberg 4-cycle engine detailed in 18-pager

Turn the cover and pull out the flap—see the engine?—that's what this 18-page booklet's about. The complete line of Nordberg four-cycle V-type engines is described, including supercharged; supercharged and intercooled, and Supairthermal. Operated on diesel, Duafuel or spark ignition gas, the engines described are available in 12 or 16 cylinders with 13-or 13½-in. bore and 16½-in. stroke. Photographs illustrate engine applications throughout the world and help describe the Supairthermal principle. Included with the new bulletin as supplements are spec sheets covering V-type engines for generator sets, for pipeline applications and two for marine propulsion. One covers the conventional type reduction gear and the other covers the Nordberg designed in-line reduction gear. Nordberg Mfg. Co.

... for your copy, circle No. 278

### 76-page source book on slitting equipment

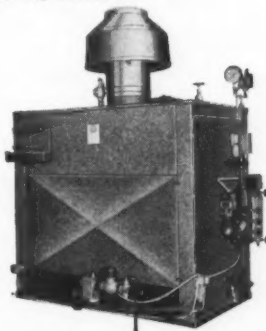
The first section of this picture-filled, chart-packed handbook, covers the design, selection and operation of slitters and slitting lines. Time studies, analysis of operating cycles, methods of coil handling, scrap disposal and other operating data are included. The second section contains specs, capacity tables and additional data on slitters, uncoilers, recoilers, coil cars and scrap choppers. The Yoder Co.

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## There's a PARKER Product FOR EVERY STEAM AND HOT WATER REQUIREMENT

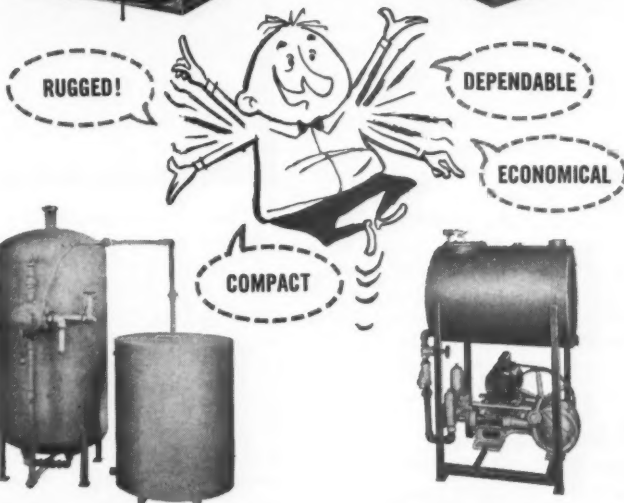
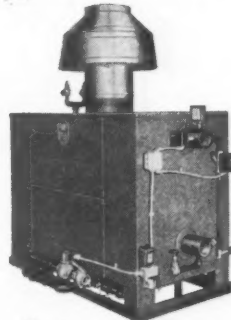
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### Ohio reducers, gears, detailed in catalog

It's pocket-sized and thick. There's more information between the colorful covers of this catalog than you'll ever digest, but it'll pay to start trying. Speed reducers, gears and sprockets are detailed and the easy-to-read index on page 1 will enable you to spot the subject closest to your pocket book. Installation and maintenance data, as well as a complete physical description of the Ohio Gear Co.'s products, are presented with specs, diagrams and photographs. And there is a list price bulletin enclosed, too. The Ohio Gear Co.

... for your copy, circle No. 280

### Cycloidal blowers featured in vacuum service catalog

Time marches on—and with it come changes you should know about. This 14-page bulletin is designed to bring you up to date on construction, and technical data on capacities and ratings (many of which have recently been increased). A full-color cutaway view of the R-C Cycloidal blower clearly shows design features, and other data is sufficiently complete for engineers to make an initial selection of equipment. Roots-Connorsville Blower, Div. of Dresser Industries, Inc.

... for your copy, circle No. 281

### Ball bearing trolleys keep conveyors rolling

Keeping trolley conveyors rolling is of vital importance in many industries. Stop-pages are costly—it pays to know about ball bearing trolleys. Specific data on types and sizes of trolleys available; selection of new trolleys and attachments; and the replacement of units in existing installations fill 20 pages of this booklet. In addition there is application and maintenance information along with data on trolley wheels, rollers for roller turns and trolleys available for electrified and heavy duty foundry applications. Link-Belt Co.

... for your copy, circle No. 282

### Abrasive cut-off—a real cost cutter

It doesn't take a book to tell a story—it can be done on a one-page fact sheet. Look at the way construction and operation features of this general purpose abrasive cut-off are presented ... proved performance ... low cost ... versatile ... easy to operate ... specifications etc., are a few easy to read headings. If cutting tubing, structurals, extrusions, pipe, conduit etc., is part of your problem, see how it can be done with speed, accuracy and economy with this 18-in. abrasive cut-off. Max Mfg. Co.

... for your copy, circle No. 283

### Conveyor belt shooter solves handling headaches



The twenty headaches most frequently suffered by conveyor belt users can be relieved through the use of this handy slide card called a conveyor belt shooter. It affords a quick method of locating the probable cause of conveyor troubles, and lists specific cures. It's the latest in a series of aids offered by this company for the engineering, purchase and maintenance of conveyor belts. Conveyor Products, Mechanical Goods Div., U. S. Rubber Co.

... for your copy, circle No. 284

### Magnetic, motorized valves for air, water, steam

Packed into the 24 fact-filled pages of this catalog are illustrations and lists of specifications of magnetic and motorized valves. For use with air, water, gas, steam, oil and refrigerants, the valves are essential parts of a production pattern. Look at those flow charts—one for liquid, the other for compressible fluids—and those solenoid coil rating tables. This is a catalog you should have in your files. The Mercoid Corp.

... for your copy, circle No. 285

### Rubberized abrasives explained in catalog

You can deburr, smooth and polish with rubberized abrasives ... and this 8-page catalog explains the many step-saving and quality improving uses of rubberized abrasive wheels, points, blocks, sticks and cones. Easy to read operating instructions, application information, tables, illustrations and the latest technical data, make it one of the most valuable reference books in the field. If deburring, smoothing and polishing mean money to you, get this catalog. You'll be glad you did. Cratex Mfg. Co.

... for your copy, circle No. 286

### Choosing and using the automatic transfer switch

How to select an automatic transfer switch and applications of this equipment are covered in this 24-page booklet. It discusses such requirements as inrush capacity ... continuous duty rating ... rapid transferral of load ... high thermal capacity and ability to withstand electromagnetic effects. Double source control, full phase protection, as well as structural and operational features are discussed. Picture and test descriptions of actual installations add to the story. Automatic Switch Co.

... for your copy, circle No. 287

### Permaseal belt idlers subject of new 8-page

The orange cover'll catch your eye, and the double flexible diaphragm seal will fire your practical senses. It keeps grease in and dirt out, and is something you should know about if you're concerned with the problem of moving materials by conveyor. Drawings, photographs and detailed copy show how these idlers have saved thousands of man-hours. There's a two-page spread giving you a cutaway look at what goes into making these belt idlers real money savers ... and look at the types of idlers you can choose from (they're on page 6.) Jeffrey Mfg. Co.

... for your copy, circle No. 288

### Flexirack pallet rack with adjustable shelves

Blown-up inserts in this four-page, two-color bulletin, show the step-by-step process by which shelf height of the Flexirack pallet rack is adjustable in seconds by lift truck. Skids, special runners and shelves are detailed, with the versatility and space economy of the racks dramatically illustrated by photographs and drawings. The magnified close-up on the cover is the simple secret to giant cost-savings in storage and handling. **Hartman Metal Fabricators, Inc.**

... for your copy, circle No 289

### US Verticlosed pump motor guide manual

To help pump dealers and maintenance men save time in installing, inspecting and servicing Verticlosed pump motors, this picture-packed manual has been published. In careful, easy-to-understand steps, it outlines factory developed procedures for installation and maintenance. Mounting, oil-fill, electrical connection, mechanical connection and the use of upthrust protection where needed are detailed. A full page is devoted to tables of recommended oils and greases, listing the manufacturer and trade name of each. And a convenient two-page trouble-shooting chart gives symptoms, along with probable cause and remedy, for motor failures to start, running hot, vibrating, etc. **U. S. Electrical Motors Inc.**

... for your copy, circle No. 290

### Automatic floor machine scrubs and dry-cleans

It's 20 times faster than old-fashioned cleaning—and carries the name Convertamatic for a special reason. You can use it for high-speed scrubbing and wet pick-up... for high-speed polishing and dry cleaning... and as a complete, portable, wet-dry industrial vacuum. Flip through this data-filled fold-out and you'll be treated to comparative job time requirements... details of performance features, and a series of in-action pictures. **Advance Floor Machine Co.**

... for your copy, circle No. 291

## for INDUSTRIAL WIRE CLOTH problems...



**Nationwide Sales Force**—CF&I Industrial Wire Cloth salesmen are located in 38 key cities from coast to coast and in Canada.

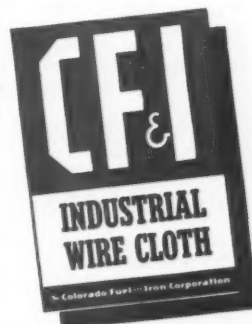
**Experience**—CF&I Sales Representatives are all thoroughly familiar with Industrial Wire Cloth, and can help you solve your problems by recommending the type of cloth that's right for your application.

**Information**—Our salesmen are all prepared to quote on prices and stock items—you save time in your quotations.

**Facilities**—CF&I's sales force is backed up by complete manufacturing facilities. They can offer wire cloth in a wide range of meshes, metals and weaves.

**Rapid Delivery**—CF&I carries large stocks of all standard types of wire cloth, available for immediate shipment.

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nearest sales office or write  
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5427

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... for more details, circle No. 32 on Reader Service Postcard

# Shuford's

## NEW

### ELECTRICAL TAPE



### SHURTAPE® EV-57

#### A VINYL PRESSURE-SENSITIVE TAPE FOR HIGH VOLTAGE INSULATION

Here's a vinyl tape which combines desirable electrical characteristics with high resistance to oils, corrosive chemicals, humidity, fungus and mildew . . . conforms to irregular surfaces . . . works easily in limited areas.

Use it . . . to protect splices and connectors in power control leads. Use it . . . to insulate high voltage motor leads. Use it . . . on bus bars . . . as pipe wrap . . . to insulate wires and splices in junction boxes and TV-Radio installations.

Use Shuford's new SHURTAPE EV-57 wherever high dielectric strength, high insulation resistance, high stretch, high strength and excellent adhesion are required.

Ask your  
**ZELLERBACH PAPER COMPANY**  
Representative  
or write



World's Largest Manufacturer of  
Cotton Cordage

3083

. . . for more details, circle No. 33

#### 30 pages about variable speed motor pulley drives

Design and construction of Ro-to-Cone variable speed motor pulley drives is only the beginning with this fact-packed volume. Operating principles, examples of installations, notes on drive selection and spec charts come tumbling afterwards. You'll take one look at the blueprints on ratings of 20 hp. motors with 1,750 rpm. capacities and send for a duplicate of this reference book for the plant . . . you'll take yours home. Gerbing Manufacturing Corp.

. . . for your copy, circle No. 292

#### Conveyor pulleys detailed in spec-filled source book

Pulleys featuring quick detachable hubs, and of welded steel construction for service on general, package, portable and production line conveyor systems, are the focal point of this spec-packed, data-filled 12-pager. Page after page of precise specifications will appeal to the practiced eye . . . and that means most of you. There's a wealth of information here for the reading. R&J Dick Co., Inc.

. . . for your copy, circle No. 293

#### Latest in titanium welding techniques

"What's New In Titanium Welding" is a quick summary of the latest techniques in resistance

and fusion welding of commercially pure and alloy titanium. It's fourth in a series of short discussions of various phases of titanium technology for design engineers. And it's really worthwhile reading, too. Titanium Metals Corp. of America.

. . . for your copy, circle No. 294

#### Guide for purchasing unusual alloy sheet

There's a lot to know about the newest alloys. With rockets ready for the moon, advances in light plate fabrication have been rapid and often secret. Here's a guide for purchasing complex and unusual alloy sheet and light plate fabrication that devotes 30 pages to discussing characteristics of such metals as steel, aluminum, monel, inconel, nickel, titanium and others in gages up to  $\frac{3}{8}$  in. Detailed descriptions and over 80 pictures and sketches of products and fabricating techniques combine to make this booklet a permanent handy reference manual for management, design, development, and process engineers, as well as purchasing agents. S. Blickman, Inc.

. . . for your copy, circle No. 295

### LOW-COST PORTABLE SHELTER FOR INDUSTRY



Light, waterproof panels, quickly bolted together.  
Can be easily enlarged or dismantled and moved.  
Stores neatly in a small space for future reuse.

SIZES: 9' or 12' widths to any length (in 3' modules)  
(9x6, 9x9, 9x12, 9x15, 9x18, etc.—to any length)  
(12x12, 12x15, 12x18, 12x24, etc.—to any length)

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OLYMPIC 2-7237

#### A LOW-COST UTILITY BUILDING ... IN A HURRY!

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### LOW-COST PORTABLE SHELTER FOR INDUSTRY

. . . for more details, circle No. 34 on Reader Service Postcard

WESTERN INDUSTRY—August 1958



### 38-page handbook guide to splicing wire rope

The days when every young man knew how to splice a rope are long past . . . and even then they couldn't splice wire rope. But you can learn how with this 38-page handbook. One of a series of educational books put out by the company, it covers various eye splicing methods, endless splices, preformed and Land Lay wire rope splicing and the Chicago technique. In addition, the subject of grommets, socketing of ferules and efficiencies of wire rope attachments are detailed—together with an engineer's notebook on wire rope construction and specifications. It's a packaged education . . . well worth getting. Union Wire Rope Corp.

. . . for your copy, circle No. 296

### Catalog details technology of interior latex paints

Acrylic latex paints for interior use are the subject of this 30-page technical manual based on a five-year study and practical manufacturing experience. It's a companion volume to the company's 80-page manual, "Progress Report Four," and gives summaries, tables and formulations for each type of interior acrylic paint, including sealers, primer sealers, white top coats, tint bases and colored paints. Rohm & Haas Co.

. . . for your copy, circle No. 297

### Gravity conveyor detailed in 16-page brochure

Dealing with the many various applications to which gravity wheel conveyors have been adapted, this bulletin makes use of pictures, drawings, diagrams and spec tables, to discuss selection of conveyors, as well as their construction. The index of subjects on the cover gives immediate indication of what's inside: Rapid-Wheel conveyor in use; how to select Rapistan gravity wheel conveyor, etc. And you won't be disappointed at what's between the covers. The Rapids-Standard Co., Inc.

. . . for your copy, circle No. 298

*Because this has what it takes...*

The rugged durability and extra value (Timken tapered roller bearings in every wheel, spring loaded non-kicking handle, slide planes for easy pallet entry and 360° lifting radius as standard) of the REVOLVATOR Red Giant hand lift pallet truck (above) has built a reputation which means that...



Red Giant  
Hand Lift  
pallet truck

*We were called on to do this...*



Explosion-proof  
High-lift  
Go-Getter

One of six basic models . . . REVOLVATOR Series 54.00 Go-Getter for use in explosion hazardous areas for chemical and related companies with Class I Group D or Class II Group G hazards designed at the request of one of the country's leading safety authorities. This electric lift truck meets requirements for both hazards and utilizes screw type housings hydrostatically tested to pressures far beyond those required. Additional safety feature—hydraulically operated disc brake.

**Therefore:** Whether you need a standard piece of material handling equipment or specially designed equipment, call on

**REVOLVATOR CO.**

8798 TONNELE AVENUE, NORTH BERGEN, N. J.

. . . for more details, circle No. 35 on Reader Service Postcard

## Elec. maintenance

(continued from p. 27)

oil insulated transformers. But it's important. Check the temperature as indicated by the gage, note the air or ambient temperatures, and load conditions.

Condition of the oil is important in the inspection of circuit breakers, too. See that contacts (main and auxiliary) are in good condition, and check the operating mechanism to make sure it works freely.

And while you're at it, lubricate the pins and bushings—see that all the cotters are in place—and that bolts, nuts and set screws having to do with the breaker structure are set tight.

Lubrication on any rotating piece of equipment is vital.

At the W. P. Fuller & Co. plant in San Francisco, lubrication engineers from a leading oil company were called in to survey the operation and recommend lubricants to be used.

The result was a cut in lubricants used from 21 to 11 (later increased to 16.) "Premium priced lubricants were eliminated in many cases," Fuller's plant engineer, **John Panella**, recalls, "and lubricating periods were set and charts made to indicate frequency of lubrication."

"It was also decided that one man should be regularly assigned to lubricate everything but mobile equipment. The choice was for a man who would be reliable and not let the boredom of the job make him careless. In time it is hoped he'll become sufficiently expert to be able to spot undue wear by foreign noises, misalignment or overheating," John stresses.

A word of warning. It's difficult to prevent a man from giving a piece of equipment "just one more shot" of lubrication. What he does not realize is that over-lubrication will do more damage to bearings than none at all, and on open gears or oil holes will make things messy, instead of clean and safe.

Causes of oil transformer failures are well known by **Bob Pleski**, plant engineer at the Pacific Electric Motor Co., Oakland, Calif. "Oil transformers are very reliable," Bob admits, "but troubles can result from a combination of age and heat making the oil turn acid. As the acidity increases, the oil tends to sludge and plug up the cooling ducts built into the transformer. This results in furth-

er heating and sludging," Bob sighed, "and if uncorrected, burning up the insulation."

Oil can become contaminated with water, dirt, rust etc., lowering the dielectric strength (insulating value) of the oil, and if it gets too low there will be an arc inside resulting in equipment failure.

As preventive maintenance, Bob offers the following advice:

Don't overload transformers for extended periods. They can stand 55 deg. C. rise continuously . . . Have oil checked periodically . . . dielectric strength across. 100-in. gap is:

30,000 volts and above—excellent

25,000-30,000 volts—very good

22,500-25,000 volts—good

20,000-22,000 volts—satisfactory

17,000-20,000 volts—doubtful

below 17,500 volts—unsatisfactory

Low dielectric readings can be improved by filtering, but as the acidity value rises, more frequent checks should be made on oil. Acidity is usually expressed in mg. of KOH required to neutralize the acid in a 1-gram sample of oil.

The amount of acidity it's safe to tolerate varies with conditions. Here's a guide that may be of use:

.3 mg. KOH—O.K.

.6 mg.—questionable

.9 mg. or more—replace oil.

Result—less down-time.

Talk to chief industrial engineer **Milt Laursen**, presently busy moving his Western firm into a new plant, he'll tell you down-time's expensive. "At our old plant," Milt said, "we were up to the ceiling as far as load is concerned. The addition of a pencil sharpener might have proved too much. But I can't remember a break-down in six years," he added.

Why?

Because of good maintenance. Cleaning contacts . . . checking for grounds . . . insuring good lubrication, plus a complete check-up when the plant was closed during its yearly shut-down. It took a maintenance staff of 13 (4 preventive, 5 for break-downs, and 4 for new work going in), but it was worth it.

"We let motors run until something went wrong, in some cases," Milt recalled. "It was cheaper than taking them out for periodic checks. Especially on lathes and punch presses. But we had to keep a sharp eye on

wiring in the plating room," he added, "because acid eats into conduits and if you don't watch out you've got a fire on your hands."

In moving to a new plant, Milt's planning a regular system for preventive maintenance. He's drawing up check lists for big pieces of equipment such as air compressors, switch gear, ventilating and air conditioning units. He's making sure that the maintenance man has a good working knowledge of the electrical and mechanical characteristics of the apparatus in his care, although the check-off list is easy enough to follow . . . take G. E. Induction heater equipment:

Turn off main plate . . . turn off filament circuit switch . . . wait at least three min. before turning off coolant water supply . . . check all contactors, relays, timers, etc. . . . clean off rectifier tubes . . . inspect rectifier blower and motor (clean and grease every three months) . . .

There are 24 items for the maintenance man to check-off on his chart, including inspection of plate voltage top switch, oil cycle timer, pressure switches, etc. They add up to one result—when the check-off's complete, the induction heater shouldn't cause any headaches for at least another month.

Some maintenance precautions must be learned by experience.

In Milt's case, although tubes of the induction heater were guaranteed for 1,000 hrs., they never provided that length of service. And new ones cost \$500 each. But by taking a little trouble to trace the fault, Milt has instituted a system of maintenance which takes less than an hour a month (check and clean contacts, cooling water lines, etc.) and which extends the life of tubes at least three times guaranteed life.

Electrical maintenance is a process that should be continuous to be most successful.

Recognition of good work may be slow in coming—and bad work can disrupt an entire operation. Good reports of equipment checks are vital. They show that the maintenance inspector is hard on the job and allow the electrical supervisor to take the kind of prompt action which keeps maintenance costs low and operation high.

Maintenance saves money—your money—don't forget it.

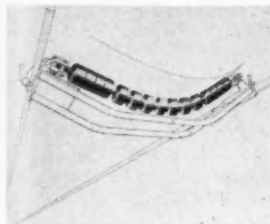
# NEW EQUIPMENT

for Western plant operation  
production, and maintenance

USE RIP OUT POSTCARD, page 75, for more information on products described

## LIMBEROPE BELT CONVEYORS

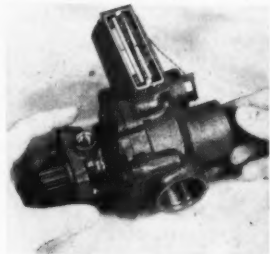
... eliminate rigid support framing



A new twist in bulk handling is used in Limberope belt conveyors. By suspending flexible idlers between parallel stringers of steel wire rope, need for rigid support framing is completely cut. Results—lower costs; quick, simple installation, and reduced maintenance. Because there are fewer parts than on ordinary conveyors, it's much lighter and easy to relocate or extend. Construction characteristics? ... two parallel strands of wire rope are stretched between widely separated anchor points. Rigid stands with integral return idlers support the rope every 12 to 40 ft., depending on load. Idlers consist of a series of neoprene discs molded to a neoprene-covered cable that is suspended in a catenary between two sealed bearings. The belt is supported in a natural arc, and idlers are free to flex and swivel, conforming to the load as the belt passes over them. Rigid brackets keep the rope stringers parallel and aligned. Joy Mfg. Co. ... for more details, circle No. 300

## DISPLACEMENT GEAR PUMPS

... with only two major moving parts



Designed especially for use in airborne hydraulic systems, this new line of variable displacement gear pumps can be applied to industrial machinery. Containing only two major moving parts and featuring automatic pressure compensation, the pump—designated the VIEP—provides reliability and simplicity of a gear pump combined with advantages of a variable displacement piston pump. Main pumping elements consist of an integral ring gear and pinion. An integral pressure-sensing device provides automatic pressure compensation, adjusting pump displacement to meet variations in system delivery requirements. Adjustment for variation in pump delivery is accomplished by a simple linear motion. External linkage for manual or automatic remote control of pump displacement can be provided. Pesco Products Div., Borg-Warner Corp. ... for more details, circle No. 301

## OAKITE AIREFINER # 54

... keeps heat exchange units slime-free

Build-up of slime, algae, corrosion and scale in air conditioning, humidifying and heat exchange

equipment is eliminated by Oakite Airefiner # 54. Used at concentrations of 2 to 4 lbs. per 1,000 gals. of water, it controls scale and keeps the pH of water in the low alkaline range, minimizing delignification of wooden cooling towers. Completely soluble in hot or cold water, it's non-toxic and unaffected by heat. Oakite Products, Inc.

... for more details, circle No. 302

## SHURE-SET FASTENING TOOL

... speeds telephone installation 50%

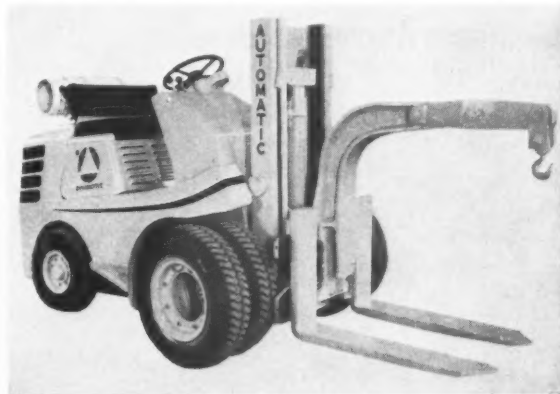
Using the power of a swung hammer to drive studs into a variety of non-brittle surfaces and light gage metals, the R-260 Shure-Set fastener has reduced fastening time in telephone installation by 50%. Controlled tests comparing the fastener with masonry drill fastenings reveal that fastening 100 ft. of I.W. cable to concrete by drilling took two hrs. and two min.; Shure-Set took only 38 min. for same job. Using the older method to fasten a section of molding to cinder block took 12 min.; with the aid of Shure-Set the job was done in two min. And the tool is supplied with a drill holder so that a worker may drill holes manually, wherever necessary, with the same tool. Ramset Fastening System, a part of Olin Mathieson Chemical Corp.

... for more details, circle No. 303

## FORK AND BOOM ATTACHMENT

... cut need for extra handling units

No need to keep special equipment for handling non-palletized materials—now there's a boom and hook attachment which allows a fork lift truck to act as a crane truck. The basic boom attachment extends 30 in. and has a capacity of 4,800 lb. Additional extensions are available to lengthen the boom to 42 in. or 60 in. (at which length its capacity is



4,000 lb.). Though the boom and hook attachment may be easily adapted to any of Automatic's line of high lift fork trucks, it is seen in the photograph on a Dynamotive. Automatic Transportation Co., Div. of Yale & Towne Mfg. Co.

... for more details, circle No. 304



## PACKAGED ROLLER CONVEYOR

... kit assembles into sturdy conveyor



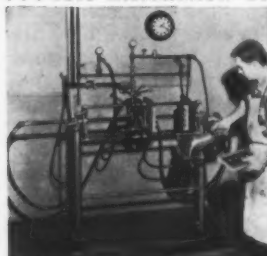
Marketed under the trade name Kwik-Roll, this completely packaged kit can be assembled into conveyor sections with the aid of a wrench, in a matter of minutes. Available in 10 ft. and 5 ft. sections, conveyor widths are 12, 16, 20 and 24 in., and the same widths are being marketed in curved sections. Supports provided give an adjustable height from 40 to 46 in. when rollers are high

and 38 to 44 in. when rollers are low. Capacity per section is 120 lbs./ft. evenly distributed. Frames bolt together and rollers spring-in for fast, easy assembly, and supports can be located at any position along the side rail because of their clip-on feature. Mechanical Handling Systems, Inc.

... for more details, circle No. 305

## SHELL CORE MACHINE

... cuts installation costs



Just hook it up to gas and compressed air lines and you're in business ... ready to make shell cores. It's as simple as that with this Dependable Shell Core Machine with a complete system of automatic valves and controls preassembled on a wall panel. Operating accessories include blow-off gun, silicone spray gun, air and gas hoses and fittings, surface thermometer and a pair of heat-resistant terry cloth gloves. The machine produces small cores in four gang boxes at the rate of 10 per min. and cores up to 9 in. in diameter or 18 in. in length at the rate of one per minute. Total cost of the unit? ... \$1097 FOB Portland, Ore. Dependable Pattern Works.

ating accessories include blow-off gun, silicone spray gun, air and gas hoses and fittings, surface thermometer and a pair of heat-resistant terry cloth gloves. The machine produces small cores in four gang boxes at the rate of 10 per min. and cores up to 9 in. in diameter or 18 in. in length at the rate of one per minute. Total cost of the unit? ... \$1097 FOB Portland, Ore. Dependable Pattern Works.

... for more details, circle No. 306

## MINIATURE FLEXIBLE COUPLINGS

... choice of six different sizes



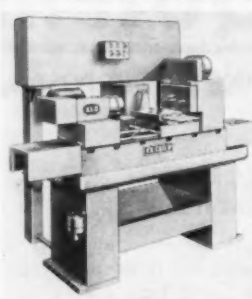
A standard line of miniature flexible couplings designed to eliminate all back-lash and transmit uniform angular velocity at high speeds is now available in phosphor bronze and beryllium copper. A hydraulically formed seamless metal bellows is employed as the heart of the flexible couplings to

reduce bearing wear and excessive friction caused by misalignment of shafts. Shaft sizes range from  $\frac{1}{8}$  to  $\frac{5}{16}$  in. Overall lengths vary from  $\frac{57}{64}$  in. to  $\frac{13}{32}$ . Bellows and heads are delivered electro tin-plated. Bridgeport Thermostat Div., Robertshaw-Fulton Controls Co.

... for more details, circle No. 307

## PRECISION BORING MACHINE

... one or several holes in one pass



A radical departure from accepted precision boring practice is evident in the Ex-Cell-O multi-spindle boring concept. Many small gear cases and similar components requiring accurate holes held to close center distances have previously been bored one at a time.

Now, with a custom made multi-boring plate, fitted with miniature precision spindles, such holes may be bored in one pass on a high production basis with all the accuracy associated with conventional boring methods. The machine table is operated pneumatically with accurate hydraulic feed control, and a centralized hand control lubrication system is provided. Ex-Cell-O Corp.

... for more details, circle No. 308

## BOSTITCH CARTON BOTTOMER

... drives 4,000 staples without reload

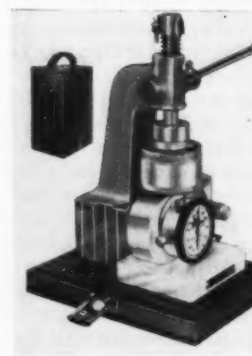


Heart of this new stapling concept is the continuous belt of copper-coated staples used in the machine. Up to 4,000 partially formed and cohered staples are contained in a single coil, eliminating 75% of the usual staple reloading time. Each push of the operating lever drives one staple, simultaneously forming another ready for driving. This motor-driven box bottomer is capable of stapling speeds up to 190 staples per min. Bostitch.

... for more details, circle No. 309

## PORTABLE ARBOR PRESS

... for field and laboratory use



Determining the caking characteristics of powdered materials has been made easy — by a 7 lb. arbor press. It can be used either in the lab or field, and features a Dillon mechanical force gage with red maximum pointer on the lower platen, beneath a removable ram. For checking powdered material a cylindrical cup is mounted to the gage. Once filled,

the ram of the press is lowered and force applied to specification. The inner ring is then removed, leaving a compressed pellet. Final test load is applied until the pellet crumbles, giving exact knowledge of its caking characteristics under different physical conditions (moisture, temp., etc.). W. C. Dillon & Co.

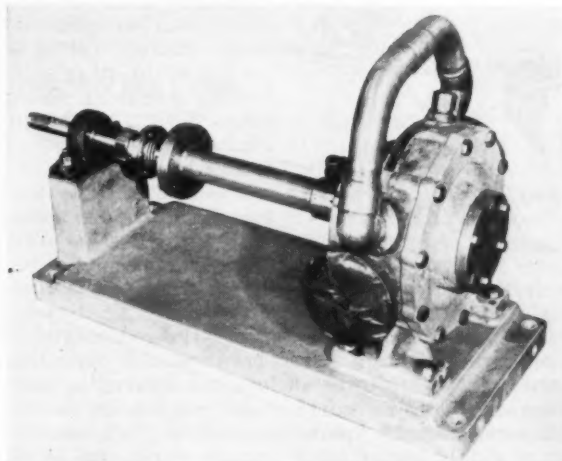
... for more details, circle No. 310

## POWER TAKE-OFF ROTARY AIR COMPRESSOR ... truck mounted, it's only one in field

Here's a compressor that derives all its power from the engine of the truck on which it's mounted ... and it's 60% lighter than conventional compressors used by utilities for construction, maintenance, and repair work. Measuring 38 in. in length, it is 28 in. wide, 39 in. high, and takes up only 40% of space required by other compressors. The power take-off unit is belt driven and controlled from the cab. Its variable capacity control allows it to produce more air than conventional reciprocating machines—maintaining a consistent delivery of 125 cubic feet of air per min. at a pressure of 1,000 psi. The complete unit, weighing 950 lb., includes a two-stage, oil-cooled rotary air compressor, speed control, engine governor, oil cooler, air storage tank, oil separator and storage receiver, all mounted on a common base. Low starting and break-away torque hold engine maintenance to a minimum. **Worthington Corp.**

... for more details, circle No. 311

## LIQUEFIED GAS PUMPS ... can be tailored for you



Use liquefied atmospheric gases? Look at these three pumps developed to handle the transfer of liquid oxygen, argon and nitrogen. They fall into two basic categories: the IT-250 and 2T-300 ball bearing, turbine type pumps; and the M-47C, immersed reciprocating pump. Ball bearings in the turbine pumps make it possible to operate at high speeds with minimum turbine stages, extending service life between overhauls. The immersed reciprocating pump is inherently maintained at its operating temperature, and does not require costly cool-down periods before pumping ultra-cold fluids. Know-how on how to use these pumps and details on construction are waiting to be sent as soon as you ask for them. **Linde Co.**

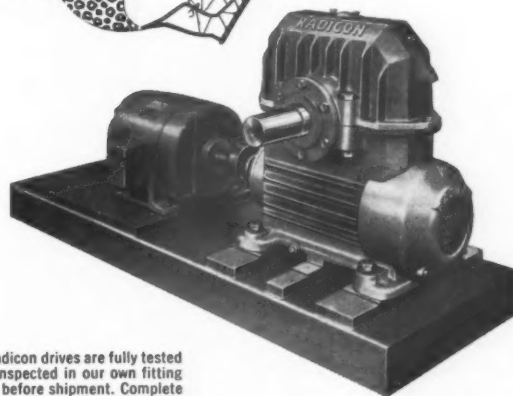
... for more details, circle No. 312

## LARGE CAPACITY ELECTRIC PLANT ... fully equipped for remote starting

Identified as Model 25R81, this 25 kw. 120/208 volt a-c unit is equipped for remote starting. The generator is a 12 lead, reconnectable, revolving field type with direct-connected exciter and automatic voltage regulation. A high torque exciter cranking

**Almost Nothing To Do...**  
when you select—

# RADICON COMPLETE DRIVES



All Radicon drives are fully tested and inspected in our own fitting shop before shipment. Complete Drives are delivered with all lubricants furnished, and ready to set.

Eliminate a major part of your drive design problems—just position the efficient new Radicon Complete Drive, set six bolts, and you're ready to roll!

No need to buy reducers, motors, couplings—then spend time shimming and aligning. Radicon reducers and motors are already carefully shimmed and aligned on heavy fabricated steel base plates, of double box construction, firmly ribbed for rigidity. This means minimum stress at the flexible coupling... long service, low maintenance.

Fan-cooled Radicon Speed Reducers, like the type RHU shown with the above complete drive, are being specified by original equipment manufacturers in many industries these days. They have learned Radicon's ability to withstand extremes of temperature, dust, dirt and rain—all with low initial cost, and low maintenance! Find out for yourself—write or phone today.

Immediate delivery 3" to 14", all standard ratios from 5:1 to 60:1. Radicon complete drives supplied by all authorized David Brown factory branches and distributors.



**DAVID BROWN, INC.**

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6025 Atlantic Blvd., Maywood, Calif.  
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Gear Products for: Mines, paper and pulp mills, chemical plants, food processors... conveyors, hoists, agitators, screens, deckers, filters, canning machines, and other industrial equipment.

... for more details, circle No. 36 on Reader Service Postcard

at high rpm. assures quick starting, while voltage regulation is within plus or minus 2%, frequency regulation 3 cycles. The engine develops 60.7 hp. at 1,800 rpm. and is of valve-in-head design. Valve rotators and special alloy steel exhaust valve seat inserts insure long valve life. **Kohler Co.**

... for more details, circle No. 313

## HELICAL-GEARED REDUCERS

... easily adapt to mounting positions



Stock models of these standardized units, for shaft mounting (pictured) or base mounted, will meet virtually all your drive requirements. Basic units are available in three types, all in the Optimount series. Reducers for V-belts, sprocket or gear drive to

input shaft ... Ratiomotors that provide direct motor drive to input shaft ... while Flanged Reducers are Ratiomotor units sold without the motor. The accurately machined semi-steel housing in the Optimount basic unit encloses heat-treated alloy steel gearing, precision finished for maximum efficiency in power transmission, quiet operation, and long service life. Gear shafts are mounted on ball bearings and double-lipped oil seals for all shaft openings assure extra protection against leakage from within and contamination from without. **Boston Gear Works.**

... for more details, circle No. 314

## FIRE HAZARD

NOW REDUCED WITH

# NEW PENNZOIL HYDRAULIC FLUID FR

### Protects Human Life

In industries where hydraulic fluid is used there are numerous injuries caused by fire when fluid escapes from ruptured lines near molten metal, electric motors, or a furnace.

### Pennzoil's New Fluid Will Not Ignite

It will not foam. It is not necessary to install special seals and gaskets nor to purchase specially prepared water for use as "make up" when evaporation occurs.

### Will Not Cause Skin Irritation

Pennzoil non-flammable hydraulic fluid is highly filterable. Any of the common elements may be used.

## THE PENNZOIL COMPANY

1630 W. Olympic, Los Angeles

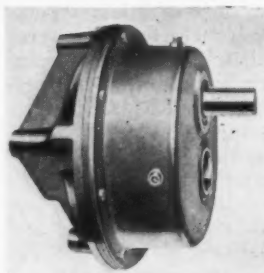
Pennzoil's Trained Hydraulic Engineers are available for consultation regarding Hydraulic Fluid FR. Write for more information.



... for more details, circle No. 37 on Reader Service Postcard

## COMPACT GEAR DRIVE

... bolts directly to machine



There's more to it than being able to bolt this gear drive directly to the driven machine—it can be installed as a geared pillow block, too. By doing this, one machine bearing is eliminated and the overall size of the installation is cut. Flange mounted drives are available for

horizontal or vertical application, with high speed shaft up or down. They're rugged units which come furnished from stock in single reduction for applications of 1/2-10 hp., and in two double reduction ratios for 1/2 to 5 hp. **The Falk Corp.**

... for more details, circle No. 315

## LOW-COST PLATFORM CONVEYOR

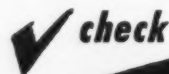
... moves loads up to 1-ton



Moving loads between floors, into basements or over existing stairways—even unloading and loading trucks—is made easy with this Moto Flow freight conveyor. It can be installed anywhere and permits use of extra storage space and facilities which might otherwise be in-

accessible. The platform, in various sizes, is constructed of all welded steel bar and tubing. Sturdy rails of heavy formed plate, and flanged construction permit floating action between rails and platform. Safety features include an automatic, mechanical platform safety brake which locks the platform instantly, plus instant motor cut-out and lock, should either cable become slack. An automatic slack cable switch operates instantly to stop the motor if any obstacle be encountered during descent of the platform, and a solenoid brake is installed between the winch and motor to automatically stop the conveyor at any desired point in case of power failure. **M-B Corp.**

... for more details, circle No. 316



the many advantages of

SORBOCAST

# CAST IRON DAYTON FOUNDRY

Hollydale, Calif. • NEvada 6-1251

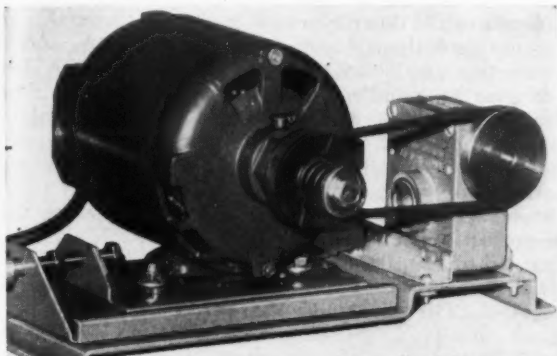
... for more details, circle No. 38 on Reader Service Postcard



## NYLON-FIBERGLASS FHP COMPONENTS

... cuts costs, corrosion, replacements

Ever heard of a molded plastic speed reducer and variable speed pulley? They're here, and both units entirely molded of fiberglass-reinforced nylon except the machined shaft, worm gear and tension spring. The reducer provides reduction ratios of



10:1 to 60:1 and can be furnished with solid or hollow output shaft. It weighs less than 3 oz. and measures  $3\frac{3}{4}$  in. high x  $3\frac{7}{8}$  in. wide x  $3\frac{1}{8}$  in. deep overall. Fiberglass plastic design overcomes many common problems of high costs, corrosion and excessive replacements. **Rampe Mfg. Co.**

... for more details, circle No. 317

## THREAD ROLL DIES

... for precision screw threads

Here's a complete line of thread roll dies for producing external screw threads in fine and coarse thread series. They're available in standard thread sizes from No. 6-32 to 1 in.-14, and made of special alloy steel, with threads being ground after heat treatment for maximum accuracy. Look at the other features: precise root radius control, thread contours designed for maximum fastener fatigue life, tolerances in terms of ten thousandths, finishes to 20 micro in., and very small lead error. They're especially useful for harder-than-average stock or where threads must be rolled after heat treatment. **Thread Roll Die Div., Standard Pressed Steel Co.**

... for more details, circle No. 318

## VERSATILE DIE HANDLER

... to side or end load 60,000 lb.

You can end or side load dies weighing 60,000 lb. with this versatile, electric-powered die handling lift truck. In addition to the new model's high capacity and two methods of loading, an important feature is the provision of bollard extensions for accurate die placement in press or storage. Designed into the pusher bar which joins the side-loading bollards, the extensions are put into position manually when extra thrust beyond the dimensions of the truck platform is necessary for proper placement. The extensions serve a further purpose of speeding die handling with the truck by eliminating the necessity for close-up maneuvering of the truck platform when putting a die in place. The bollards are hydraulically controlled to move dies sideways across the truck's 84-in. wide platform. They can be controlled individually or simultaneously giving a flexibility of die movement. End loading is accomplished by electric winch along the 96-in. length of the truck platform. To facilitate end die removal, the platform is equipped with seven rollers across the width of the toe end. **Yale & Towne Mfg. Co.**

... for more details, circle No. 319

WESTERN INDUSTRY—August 1958



This is the plant that is the largest

## LIQUID OXYGEN

producer in the Pacific Northwest.

Immediate delivery from 3000 to 1,000,000 cu. ft. anywhere in the Pacific Northwest.

## INDUSTRIAL AIR PRODUCTS CO.

Portland Spokane  
Medford Yakima  
Seattle Kennewick

... for more details, circle No. 39 on Reader Service Postcard



## ALL-PURPOSE DURASHEATH CUTS COST

Anaconda's neoprene-jacketed Durasheath\* cable cuts installation costs because it can be installed in ducts, buried, aerially or any combination of these in one run—with minimum splicing. It reduces maintenance and replacement costs because its rugged jacket resists abrasion, moisture, corrosive chemicals and oils that shorten ordinary cable life. Available in all sizes, single and multiple conductor, copper or aluminum, 600 to 15,000 volts. For full information, write: **Anaconda Wire & Cable Company**, 25 Broadway, New York 4, N. Y.

07589

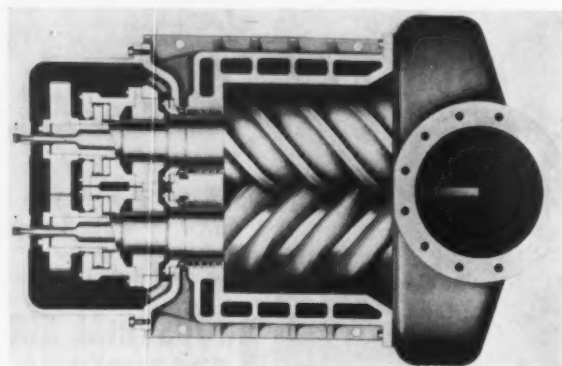
**ANACONDA®**

\*Reg. U.S. Pat. Off.

... for more details, circle No. 40 on Reader Service Postcard

## POSITIVE-DISPLACEMENT COMPRESSOR ... low-cost, with reciprocator's efficiency

With a standard capacity range of 800 to 13,000 cfm, this compressor is designed for continuous heavy-duty industrial service handling air, gas or vapor. It's a two-impeller, helical-lobe type, axial-flow, rotary machine with four-lobe power impellers and a secondary impeller with six matching gaps synchronized by timing gears. Impellers rotate with a pure rolling motion and power is transmitted to the secondary impeller through the cushion of com-



pressed gas. There's never any metal-to-metal contact between impellers or surrounding casing, making lubrication unnecessary ... keeping the product free from contamination. And maintenance

is low since there are no valves or pistons to wear. Fairbanks, Morse & Co.

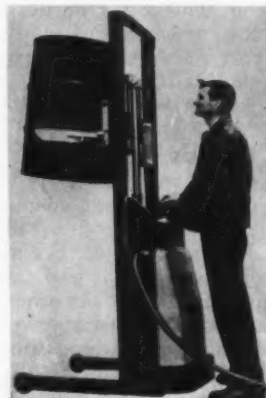
... for more details, circle No. 320

## VIBRATORS FOR DUMP TRUCKS ... shake sticky cargoes loose

You've probably seen truckers getting hot and bothered about that last part of the load which refuses to slide down elevated trailers ... now there's an easy solution. An air vibrator, which is operated from truck's air brake system, shakes loose sticking cargoes by rapidly jarring the whole trailer. Fine cargoes such as cement or wet clay are hard to dump, but with only 80 lb. of air pressure (easily supplied by installation of a reserve air tank on air brake line) the air vibrator quickly breaks them loose. On dump trailers the control valve for the vibrator is installed by the end gate, while on hopper bottom trailers, the operating valve is so positioned that the vibrator starts when the hopper is opened. The Cleveland Vibrator Co.

... for more details, circle No. 321

## AIR-POWERED HAND TRUCK ... allows lifting in hazardous areas



Maximum fire protection is assured with this air-powered elevating truck for use in areas where a spark could cause an explosion. Designed to handle loads up to 1,500 lbs.—loads too heavy for manual lifting and which do not justify an investment of heavy motorized equipment—American Safeway trucks can be quickly changed to drum stackers, platform trucks, reel handlers or

portable cranes. And lifts range up to 10 ft. 10 ins. for a 1,000 lb. load and 7 ft. 10 ins. for a 1,500 lb. load. The American Pulley Co.

... for more details, circle No. 322

## VERTICAL HOLLOW SHAFT MOTOR ... climatized for unprotected outdoor service



Climatized vertical hollow shaft motors, in ratings up to 2,000 hp., offer greater compactness and incorporate the most recent advances in insulating materials, giving optimum resistance to moisture and chemical contaminants. A maximum of two-high angular bearings are used in the motor to prevent excessive wear and reduced thrust capacity. For bearing protection the motor has an oil-metering system, sealed bearing chambers and Alnico magnet drain plugs that collect foreign ferrous particles in oil. Design allows bearing inspection of even the largest motor in five min. The Louis Allis Co.

... for more details, circle No. 323

## Metallizing is NOW a MUST in ALL Industrial Plants Because —

It Effects GREAT Savings

- by building up worn Shaft and Machine Parts
- spraying ROKIDE for high temperatures and thermo shock protection
- spraying metals of all types for corrosion and abrasive resistance
- when making Molds for plastic fabrication
- in Architectural and Decorative fields.

Get the complete story covering "METALLIZING in All its Phases" — send for your copy of this Brochure.

Our Consulting Engineering Department is at your disposal for quick and reliable solution to any Metallizing problem. No obligation of course.

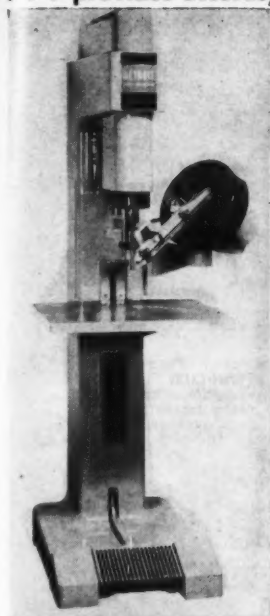


METALLIZING CO. of Los Angeles  
1233 SO. BOYLE AVE., LOS ANGELES 23

... for more details, circle No. 41 on Reader Service Postcard

## MAGAZINE-FED POWER SCREWDRIVER

... provides accuracy and flexibility

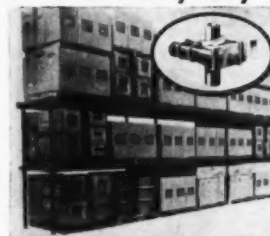


Three years in development, the Model U screwdriver embodies a positive control clutch, new type hopper driving mechanism, feed track and solenoid operated escapement mechanism. It is available as a floor machine or without the floor pedestal, as a completely self-contained driving head for use in automatic assembly machines incorporating straightline transfers, etc. The unit has a driving range of from No. 6 x 3/16 in. long to No. 1/4 x 1 1/2 in.-long screws, and the drive motor and belt, pulleys, upper spindle and clutch assembly are enclosed in a single column with all parts accessible for easy

servicing. Detroit Power Screwdriver Co., subsidiary of Link-Belt Co. ... for more details, circle No. 324

## NEW BEAM-STRUT CLAMP

... for heavy duty storage racks



Here's a universal clamp that can be used with either standard channel or I-beam and ordinary pipe. Construction of heavy duty storage racks with double-bay load capacities up to 20,000 lb. can be achieved with the Beam-

Strut at one half the usual cost. And it introduces a new concept in heavy-duty storage racks that completely eliminates the penalty of costly fabrication ... the fact that clamps can be used with either standard channel or I-beam makes it possible for ordinary pipe to be used for uprights and cross-pieces. Tube-Strut Corp.

... for more details, circle No. 325

## BULK HANDLING TRUCK

... ideal for heavy duty use



Bulk handling's made easy with this unit designed to handle sand, salt, coal, refuse, wet concrete, scrap, castings and heavy solid items. Called the Model M 30 Prime-Mover, it features a heavy duty truck axle, a completely enclosed hydraulic torque converter drive, and an air-cooled 18 hp. engine. It can be furnished in 42-in. overall width and because of its automatic drive is extremely maneuverable and fast for shuttle service or hauling loads in close quarters and up inclines. The Prime-Mover Co.

... for more details, circle No. 326

## THIS BUILDING

can be yours for

**\$1.50 PER SQ. FT.\***

\*ON YOUR FOUNDATION. SLIGHTLY HIGHER OUTSIDE THE LOS ANGELES AREA.



**APEX**  
STEEL CORPORATION, LTD.

Write or phone for complete information on this or other size buildings.

40' x 100' x 12'  
All steel rigid frame.  
Ready for occupancy in 5 days.

RAYmond 3-1191

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LOS ANGELES 22, CALIFORNIA

Write for Brochure

... for more details, circle No. 42 on Reader Service Postcard

## Copper Furnace Brazing



**SAVES DOLLARS**



**COSTS PENNIES**

Use the SUPERWELD short cut to better production at LOWER COST. We have the largest controlled-atmosphere electric furnace west of Chicago. Many parts which formerly required scarce steels and excessive machine time are now made in our furnace, quickly and at considerable savings in cost.

For further information call STANley 7-3121



**SUPERWELD CORP.**

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**SMOOT-HOLMAN**

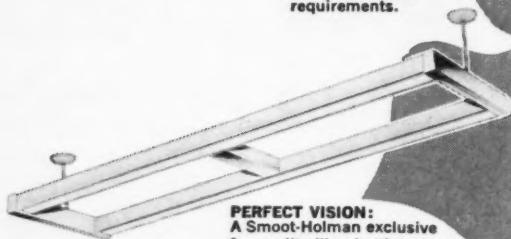
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Versatile unit meeting  
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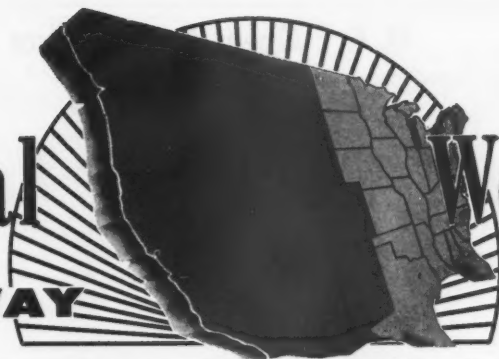


**SMOOT-HOLMAN COMPANY • Inglewood, California**

... for more details, circle No. 44 on Reader Service Postcard  
**WESTERN INDUSTRY — August 1958**

# The Industrial West

## ON ITS WAY



plants • production • distribution • personnel

### What's Going On . . .

Back in the Midwest, I think they call these "dog-days". At any rate, there's not too much going on.

But . . . several plant expansions are taking shape, as you'll read on this page . . . Pesco, Marwais, Marquardt are some examples.

The West continues to get a fat share of military contracts, as detailed on page 80, where there's also a report on a new Western branch office for an Indiana spray paint equipment firm.

A look at page 81 will show you some new American Brass mill equipment, and on 82, you can see a new tin plate line for the West.

For a summary of plant expansions in Northern and Southern California so far this year, take a glance at page 86.

And for news of who's going places and where, read Westerners at Work, pages 90 and 91.

M. C. Tracy  
WI News Editor

### \$6,000,000 Industrial Tract Announced for San Francisco Area

SAN FRANCISCO—Plans for a new \$6,000,000 industrial tract development were announced by Haas and Haynie, general contractors, who said the 180-acre parcel will meet highest planning standards with architectural controls, off-street parking and loading, and other property value protection requirements.

Called the East Millsdale Industrial Park, the new development lies just south of San Francisco International Airport and is separated by the Bayshore Freeway from the previously developed Millsdale Industrial subdivision. It is situated in the cities of Burlingame and Millbrae.

According to E. T. Haas, installation of streets and utilities will start immediately. The property will be subdivided into ¼-acre units which may be combined for any size of industrial requirement.

### IBM Takes Option on Site For New Plant Near San Jose

SAN JOSE, CALIF.—International Business Machines Corp. announces it has taken an option to buy 20 acres in Campbell, Calif., eight miles southwest of here, for possible use as a plant site.

The land, located on East Parr Avenue off Winchester Road, is under construction for housing present card manufacturing and warehousing facilities now in separate IBM facilities.

Plans under development call for a modern structure equipped with the latest card production and handling machinery. The present San Jose card plant was IBM's first manufacturing facility in the West.

### Marwais Steel Plans New Los Angeles Building

LOS ANGELES—Plans to construct a \$350,000 plant and office building that will more than double the firm's present capacity have been announced by Marwais Steel Co. The new facility will be adjacent to the company's plant at 6466 Gayhart St., built five years ago.

Marwais Steel, its affiliate, Steel Processing and Distribution Co., and the latter's manufacturing and fabricating division, Metal Plate Guard Rail, will be housed in the structure. According to company spokesmen, the building will provide one of the West's best equipped and most modern processing and warehousing operations.

An underslung crane system and a new semi-automated production line that includes a 600-ton hydraulic press are included in new equipment planned for the facility.

### \$1,000,000 Portland Expansion

PORTLAND—Dairy Cooperative Association has announced a \$1,000,000 expansion program that will include four building units. The move will consolidate all of the association's operations at 2700 S.E. 6th Ave.

### Pesco Products Builds \$1,000,000 Burbank Plant

BURBANK, CALIF.—A new plant for the Western branch of Pesco Products Division of Borg-Warner Corporation is nearing completion this month and is scheduled for occupancy in September. The 21,000-sq. ft. building is under construction at 3310 Vanowen St., on a 54,000-sq. ft. site adequate for expansion.

The new facility, which represents a total investment of more than \$1,000,000, will house combined engineering, production and laboratory activities now located in Sherman Oaks, North Hollywood and Azusa, Calif.

Pesco's Western branch now has offices at 14542 Ventura Blvd., Sherman Oaks. The branch is presently involved in a full-scale program of development and production of special purpose a-c generating equipment for aircraft and missiles.

### Marquardt Aircraft, Ogden, Will Double Plant Size

OGDEN, UTAH—An expansion program that will double the size of its plant here has been initiated by Marquardt Aircraft Co. New construction will bring the plant size to approximately a quarter million square feet.

According to D. K. Tasker, vice-president and Ogden plant manager, construction by Jacobson Construction Co., Salt Lake City, begins immediately, with occupancy scheduled for December 30.

The plant is the first of its kind in the country designed for the production of supersonic ramjet engines.

### RT & E Corp. Facility Starts Up in Oregon

TIGARD, ORE.—A new industry in the Portland area, RT & E Corporation, recently started production in its new \$250,000 plant. Electrical distribution transformers are manufactured at the new facility.

## M & E Opens Branch Office



**NEW SPRAY PAINT EQUIPMENT**—Officials of the M & E Manufacturing Co., Indianapolis, Ind.; and Anderson Steel Products, San Francisco, watch a demonstration of M & E Micro Spray guns at an open house of the new M & E branch office at 542 Brannan St., San Francisco. The new M & E branch office will offer a complete line of Micro-Spray guns, plus a complete line of spray outfits, pressure tanks, spray booths and exhaust units. Watching the demonstration are (l. to r.): **Douglas R. Anderson**, president; and **Joseph J. Nagy**, secretary-treasurer of Anderson Steel Products (who will be in charge of the M & E branch office); **Rudolph Egner**, president; and **E. L. Pfeiffer**, assistant general manager, of M & E Manufacturing Co.

## Sheridan Gear to Have New Portland Plant

**PORTLAND**—An expansion-consolidation program announced here recently calls for construction of a new factory for Sheridan Gear & Manufacturing Co. The facility will be built by Western Gear & Manufacturing Co. for Sheridan—its operating company—on a six-acre tract on NE Columbia Blvd. between 57th and 58th avenues.

Operations now conducted at Sheridan, Ore., and at 716 NE 3rd Avenue here, will be consolidated at the new plant, reports **Robert Hall**, president and general manager of Sheridan Gear, which manufactures roller and chain sprockets for the West, Alaska, Canada and Mexico.

The new facility will include offices, a warehouse and a manufacturing area. Construction begins this fall, Hall said.

## Jones and Laughlin Steel Has New Los Angeles Address

**LOS ANGELES**—A new address for its Los Angeles district sales office is announced by Jones & Laughlin Steel Corporation. New offices are at 2131 S. Garfield Ave., where the firm's stainless and strip division is also located. The new telephone number will be RAymond 3-9951, according to **R. G. Shearer**, district sales manager. Former address in Los Angeles was 4727 E. 48th St.

## Scientific Supplies Facility

**PORTLAND**—Scheduled for opening here in September are new warehouse facilities for Scientific Supplies Co. The firm is a division of Van Waters & Rogers, Inc., 3950 NW Yeon Ave., and will have its new warehouse at that address.

## Schmitt Steel Program

**PORTLAND**—To meet increasing demands for forgings and fabricated steel products, Schmitt Steel has begun a modernization and renovation program. Cost of the program will be about \$200,000.

## Aircraft Firms Lead in Contracts for West

Convair Astronautics' announcement that it has formally been awarded a \$314,800,000 Air Force contract tops the fast-growing list of military orders received by Western manufacturers. The Convair contract is for past and future work on the Atlas intercontinental ballistic missile, which is about one-third completed.

**Douglas Aircraft** and **Hughes Aircraft** are among other Western firms to get Air Force contracts in the million-dollar class. The Douglas award was for \$12,613,800 for rockets used in jet fighters and Hughes' for aircraft warning control systems for the F-106.

Other recently revealed contracts have been received by—

**American Machine & Foundry Company's Associated Missile Products Co.** subsidiary of Pomona, Calif., \$1,629,911 for radar target trainers—

**Thiokol Chemical Corp.**, Brigham City, Utah, \$1,008,475 for rocket engines in support of the Matador missile program—

**Hycon Manufacturing Co.**, Pasadena, a \$2,500,000 contract from the Navy Bureau of Ordnance for test sets for the Terrier guided missile—

**Telecomputing Corporation**, Los Angeles, two Navy contracts totalling \$1,268,889 for advanced electronic equipment and an Air Force contract for \$3,561,818 for valve equipment—

**The Ramo-Wooldridge Corporation**, Los Angeles, \$13,500,000 for installa-

tion and operation of an automatic data processing system at the Army Electronic Proving Ground, Fort Huachuca, Ariz.—

**Cohu Electronics**, San Diego, military defense orders for over \$500,000 for electronic instruments—

**The Siegler Corporation**, Los Angeles, a \$300,000 contract to produce components for the Nike-Hercules launching systems; another order to produce initial quantities of air speed-height simulators for Regulus II for Chance Vought Aircraft, and two others, totalling more than \$500,000, to build tracking stations for Explorer satellites—

**Communications Division of Topp Manufacturing Co.**, Los Angeles, a CAA contract in excess of \$450,000 for production of the Topp ILS dual glide slope projector—

**Rohr Aircraft**, Chula Vista, Calif., an order from North American Aviation for production of support pylons for the Hound Dog missile.

Among other companies to receive substantial contracts in recent weeks are **Wells Industries Corporation**, North Hollywood, Calif., **R/S Electronics Corp.**, Palo Alto, a subsidiary of Regan Industries, Inc.; **North American's Autometrics Division**, Aerojet-General Corporation; **Gilfillan Brothers, Inc.**, **Firestone Tire & Rubber Co.**, **Aerophysics Development Corp.**, Santa Barbara, and **Lynch Carrier Systems, Inc.**, San Francisco.

## Syston Corp. Announces Expansion Projects

**CONCORD, CALIF.**—Syston Corporation, electric equipment manufacturer, has revealed plans for construction of a 15,000-sq. ft. building on Galindo St. Future developments call for two more buildings, each 30,000 sq. ft., as well as a 5,000-sq. ft. office building. System presently employs about 100 persons.

## Allied Pacific Mfg. Co. Reports Expansion Plans

**LONG BEACH**—Construction begun recently for Allied Pacific Mfg. Co. will give them a 30,000-sq. ft. plant at 17825 S. Santa Fe Ave., that will later be expanded to encompass 60,000 sq. ft.

Located in the Rancho San Pedro Industrial area, the new facility, including land and equipment, will cost over \$600,000.

Allied Pacific is engaged in tool and die manufacturing, metal stamping, electrical discharge machining and prototype and experiment work for many principal airframe and accessory manufacturers.

Carson Estate Co. is owner of the new building, which Allied Pacific will occupy on a 20-year lease.



## Ramco Starts Production of Electrical Heating Units

PORTLAND—Production of electrical heating units—a new industry for the Pacific Northwest—began recently at Ramco Manufacturing & Engineering Co., a newly-organized firm at 5413 NE Columbia Blvd.

The firm will manufacture a complete line of residential and commercial electrical heating equipment, including baseboard, wall and bathroom type units. Future plans call for manufacture of other types of electrical equipment.

The new plant, which began operations in July, consists of about 14,000 sq. ft. on a 4½ acre site.

Owners of the company are *Lester V. Ramberg* and his brother, *Emil A. Ramberg* of Roseburg, Ore. Ramco makes available to its jobbers and their dealers a complete engineering service. Its electrical heating units and other products will be marketed nationally under the name "Ramco".

## GE Purchases Acreage for TEMPO Facility

SANTA BARBARA, CALIF.—General Electric Co. has exercised its option to buy a 45-acre portion of the *Ortego Ranch* in Summerland near here. The acreage is the site for the proposed facility of GE's Technical Military Planning Operation.

There are no immediate construction plans since present emphasis is placed on TEMPO's technical program. More than \$2,225,000 in study work orders for the project has been received so far this year, which will necessitate adding some 40 persons to the present staff of 116.

## Aerojet-General Nucleonics Announces Fall Expansion

SAN RAMON, CALIF.—An increase of its employees from 250 to 400 is expected at Aerojet-General Nucleonics this fall on completion of a recently announced expansion program.

Plans call for construction of a 24,000-sq. ft. engineering office and an 18,000-sq. ft. laboratory and shop building to be added to AGN's present facilities.

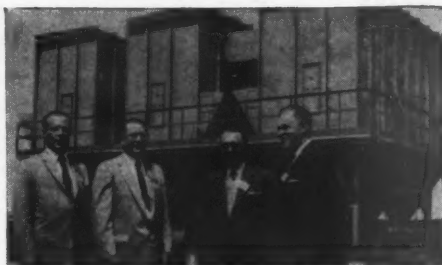
The new facility will be used primarily for nuclear reactor production and for an expansion of an Atomic Energy Commission reactor project.

## Wonderlift Trailers Name Three California Dealers

PHOENIX—Wonderlift Trailers has appointed three new California dealers for its various models of patented hydraulic lift material handling trailers.

According to *Mel Wright*, Wonder-

## Smoke Control Feature at New Brass Mill



trap all pollutants. Wheelabrator Corp. installed the system that has a capacity of 12,500 cu. ft. per minute smoke removal. Standing in front of their modern smoke control equipment were the hosts for the American Brass dedication and open house; (l. to r.) *H. A. Buckbee*, sales manager; *Warren J. Robinson*, works manager; *C. R. Epley*, vice president, and *John A. Coe*, chairman of the board, American Brass.

**MODERN SMOKE CONTROL** equipment is one of the unique features of the new \$18,000,000 brass mill dedicated recently by the American Brass Co. at Paramount, Calif. The \$200,000 smoke control system has 250 ft. of underground ducting withdrawing fumes from three 450 kw rating Ajax Tama induction melting furnaces. The fumes are then rushed to three baghouses where 1,500 cotton bags containing 8,000 sq. ft. of filter area

lift sales manager, the firm has given the *Blair-Martin Co.*, 905 Mission, South Pasadena; *Curtis Equipment Co.*, 290 Seventh St., San Francisco, and *Gordon-Hansen, Ltd.*, Rio Vista, exclusive dealer contracts in their respective areas.

The Wonderlift Trailers sales and engineering office was opened here at 215 N. 28th St., in April. The patent holder, *Arthur G. Schramm*, is in charge of product engineering, with *Wright* handling the national dealer organization. Manufacturing license remains with *Selma Trailer & Manufacturing Co.*, Selma, Calif.

## WCEMA Announces 1958 Directory on Electronics

LOS ANGELES—Publication of its 1958 directory, a 70-page booklet which lists 264 members and gives a statistical summary of the electronics industry in the West, has been announced by the West Coast Electronic Manufacturers Association.

Member firm listings in the WCEMA directory include principal company personnel, plant locations and product lines. It has both a manufacturers' index and an alphabetical index to products by manufacturer.

According to *Richard L. Paullus*, WCEMA manager, the directory is an example of the material disseminated by this association, founded in 1943 to encourage recognition and development of the electronics industry in the West.

Headquarters for the organization are at 1435 S. LaCienega Blvd., here. Branch office is at 60 W. 41st St., San Mateo.

## Oregon Processing Plant

HILLSBORO, ORE.—*Haley's Foods, Inc.*, will build a one-story processing and cold storage addition to its plant at 560 S. 4th St. Estimated cost, including equipment, is \$250,000.

## Hiller's Corporate Name Now Hiller Aircraft

PALO ALTO, CALIF.—The corporate name *Hiller Helicopters* has been changed to *Hiller Aircraft Corporation*, officials of the company announced. The new name has become more suitable, they said, because the firm's activities for the last five years have been diversified to include many other aircraft fields in addition to helicopter production.

According to *Edward T. Bolton*, executive vice president, present maximum efforts, however, to expand military and commercial helicopter production will continue for several years. *Hiller* recently received a new \$5,470,000 contract for construction of Army H-23D three-place helicopters.

## Star Machinery First Firm in Portland Davis Tract

PORTLAND—First building in the new *Davis Industrial Park Development* here was opened last month by *Star Machinery Co.* The new plant at 3325 NW Yeon Ave., is a 10,000-sq. ft. structure that will house the firm's Portland district office; a large display of machinery, equipment and tools, and an expanded parts and service department.

*Star Machinery* is one of the West's major distributors of mill and wood-working machinery, machine tools, electric and hydraulic equipment and industrial tools and equipment.

## Denver Firm to Represent Jones, Lamson Products

DENVER—*Geoffroy-Lane, Inc.*, 432 E. First Ave., has been appointed a distributor for *Jones & Lamson Machine Co.*, Springfield, Vt. The Denver industrial tool firm will handle their products—turret lathes, optical comparators, automatic lathes, thread and form grinders and hydraulic tracing equipment—in Colorado, Wyoming and New Mexico.

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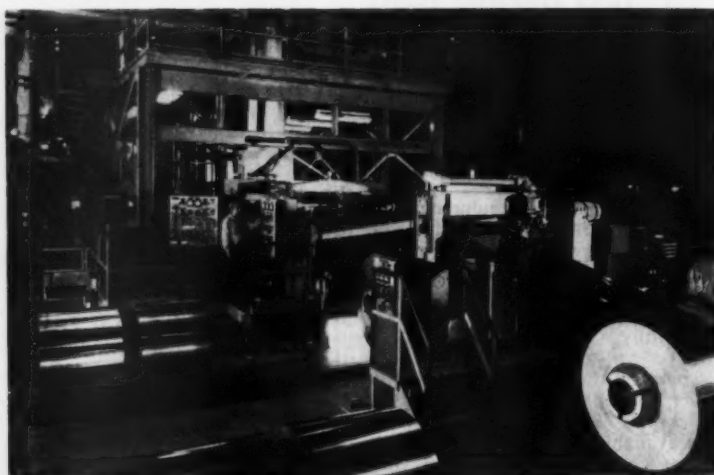
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## New Tinning Line at Columbia-Geneva



**60 SECONDS—6,000 CANS**—that's the capacity of this tinning line that can coat steel with tin at speeds up to 1,250 a minute, turning out enough tin plate in 60 seconds to make 6,000 cans. Here you see coils for cans fed into the new electrolytic tinning line built by Columbia-Geneva Division of U. S. Steel's Pittsburg, Calif., works. The facility, third in the plant, incorporates latest devices and processes for producing tin plate to exacting requirements.

## Packard-Bell Missile Work Causes Expansion

LOS ANGELES—Increased activity in missile work has resulted in the third expansion in nine months for the missile equipment section of Packard-Bell Electronics Corp. technical products division.

This latest expansion is leasing of 20,000 sq. ft. of space at 1905 Armacost Ave. in West Los Angeles, where the facility will house engineering and administrative personnel of the missile equipment section and the engineering staff of the Packard-Bell Computer Corp.

The firm is currently manufacturing pre-launch and check-out equipment for the Thor ballistic missile.

## Bruce Industries Has New Electronics Division

GARDENA, CALIF.—Organization of a new ATOHM Electronics Division has been announced by Bruce Industries, 515 E. Rosecrans Ave.

The new unit, to be headed by George Elliott, now has in production a miniature trimmer potentiometer for use in the missile field and for computers.

Sales manager for the new division is Robert H. Engstrom, formerly associated with Dale Electronics Corp., as was Elliott.

## Mark-Costello to Handle Amerigear/Bliss Couplings

LOS ANGELES—The Rolling Mill Division of E. W. Bliss Co., announces that Mark-Costello Co., Los Angeles, has

been appointed sales representative for Amerigear/Bliss spindle couplings in Southern California and Arizona. The manufacturing firm itself handles the sales and service in Northern California, Oregon, Washington and other parts of the West.

## Navan, Invention-Marketing Unit, Moves to Los Angeles

LOS ANGELES—A move to larger quarters is announced by Navan Products, Inc., the North American Aviation, Inc., subsidiary that specializes in marketing of inventions. Formerly located in Santa Monica, it will now operate from 900 N. Sepulveda Blvd. at Imperial, International Airport, Los Angeles.

Among the 118 products Navan now markets are a new precise diamond cut-off wheel; a high-strength aluminum alloy; a revolutionary box closure that replaces nails and permits re-use of box panels; a new static seal for hydraulic fittings, and an all-metal preservative.

## Flexonics at Santa Ana

SANTA ANA, CALIF.—One of four regional sales offices established recently by Flexonics Corp., Maywood, Ill., is located here. G. W. Derum is the Western regional sales manager in charge of the office, which is equipped to handle and service orders for all Flexon products including aircraft and missile components, metal bellows for instruments and controls, industrial hose, and other equipment.

... for more details, circle No. 45

## Sunset Equipment Named by Thrall, Farrell Firms

SAN FRANCISCO—Two recent announcements about Sunset Equipment Co., 268 Market St., reveal that the railway equipment firm is now a representative for Thrall Car Manufacturing Co., Chicago Heights, Ill., and a distributor for a new mobile refueler for diesel locomotives, built by Farrell Manufacturing Co., Joliet, Ill.

Sunset will be West Coast representative for Thrall Car, which builds standard and special railroad freight cars.

According to Norman A. Passur, Jr., Sunset president, the firm will handle sales of the Farrell refueler West of the Rockies.

## Ling Electronics Adds Sixth Subsidiary in Two Years

CULVER CITY, CALIF.—In recently acquiring United Electronics Co., Newark, N. J., Ling Electronics, Inc., has added its sixth subsidiary in the last two years. The New Jersey firm produces high-energy, special-purpose thermionic tubes and fixed and variable ceramic vacuum capacitors. Its proprietary products are used in radar, radio frequency power, radio transmission and ultrasonic instrumentation applications.

## Technitrol Establishes Office in Los Angeles

LOS ANGELES—Technitrol Engineering Co. of Philadelphia August 4 opened a West Coast office at 252 N. Irving Blvd. The office, under management of Jack Cudahy, will provide Western electronic equipment manufacturers with assistance on design problems that involve pulse transformers and delay lines as well as information on computer components, electronic and medical instruments and computer systems manufactured by Technitrol. Phone number at the new office is HOLLYWOOD 2-1093.

## U. S. Chemical Milling Buys Omohundro Firm

MANHATTAN BEACH, CALIF.—United States Chemical Milling Corp. recently purchased the Paul Omohundro Co., large manufacturer of fiberglass laminated structures, and will operate it as a wholly-owned subsidiary. With the new acquisition, USCM now has 15 acres covered by its plants in Southern California.

## New Infilco Address

SAN FRANCISCO—New address for the Infilco, Inc., office here is at 1485 Bayshore Blvd., where the telephone number is JUniper 7-7852, and F. S. Howard is in charge. Infilco is a Tucson manufacturer of water, sewage and waste-treating equipment.

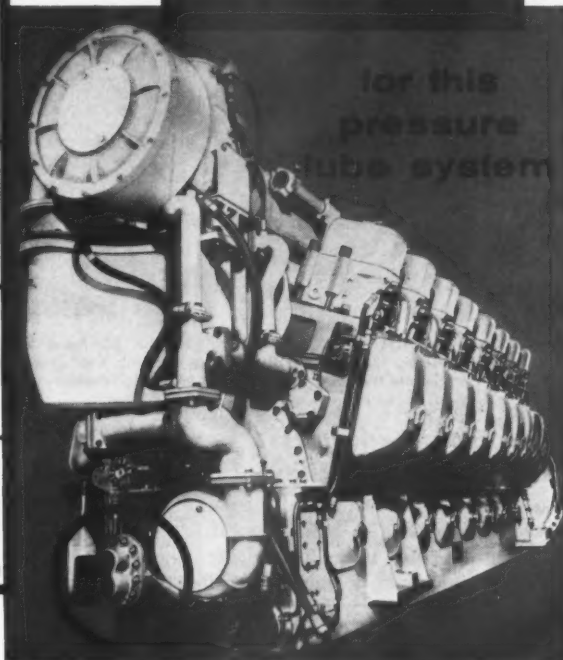


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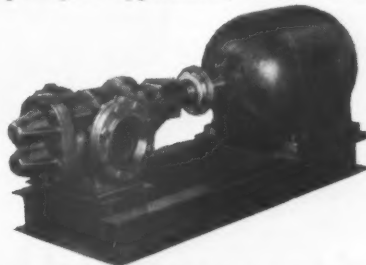
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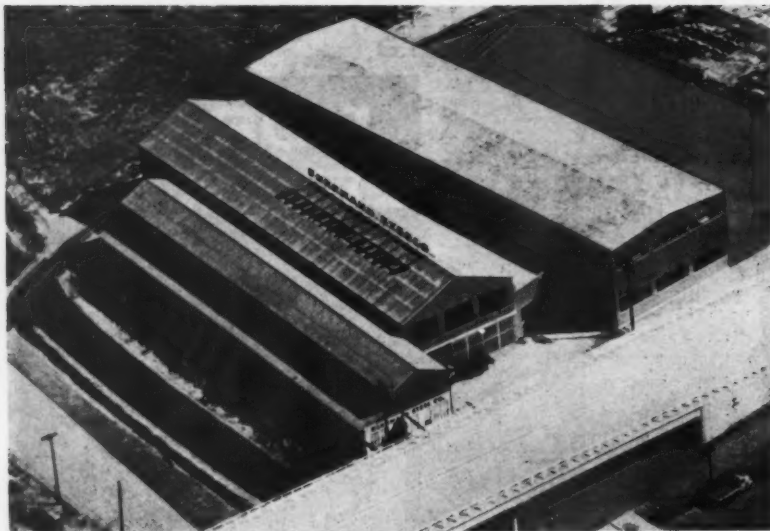
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## New Steel Warehouse in Burbank



**IMPROVED WAREHOUSE FACILITIES** are provided for Borrmann Steel Co., with this recent addition to the existing facilities at 110 W. Olive, Burbank, Calif. The new 25,000-sq. ft. building was designed to handle the steel jobbing firm's increased inventory of carbon steel bars, shapes, plates and structurals, including cold finished bars.

### Pacific Semiconductors Constructs New Facility

LOS ANGELES—Construction work commenced recently on a 48,000-sq. ft. manufacturing building for Pacific Semiconductors, Inc., a subsidiary of

Ramo-Wooldridge Corp.

Scheduled for completion next spring, the \$700,000 facility is located near Manhattan Beach, Calif. on a 17-acre site. Future plans call for production and administration facilities covering 300,000 sq. ft., at a cost of about \$10,000,000.

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. . . for more details, circle No. 47 on Reader Service Postcard

## Tilley Mfg. Represents Boston Woven Hose Co.

SAN FRANCISCO—Boston Woven Hose & Rubber Co., Boston, Mass., has selected Tilley Manufacturing Co., 1161 Folsom St., as its Northern California distributor. The arrangement will provide manufacturers in this area with the joint engineering ability of the two firms to solve rubber application problems, company spokesmen said.

The Boston firm makes a full line of industrial rubber goods—hose, belting, v-belts, tape, packing and matting. Tilley Manufacturing produces gaskets, metal stampings and packing under the Timco Products name.

### Lamson Production Up

PORTLAND—Production schedule at the two Lamson-Mobilift Corp. plants here have been boosted twice this year, Lamson dealers from 11 Western states were told at a recent meeting. Sales of the firm's industrial lift trucks each month have exceeded last year's monthly figures by 5 or 10%, according to *Karl Schmedicke*, vice president-general manager, and *Keith Ross*, national sales manager.

### Sandberg to Manufacture Furnaces for Northwest

PORTLAND—Because of the rising demand in the Northwest for natural gas furnaces suited to this climate, Sandberg Manufacturing Co., 3850 NW Yeon Ave., has established assembly line production of gas-fired furnaces. The firm has marketed heating units for about 30 years, but this is its first move into gas line manufacture.

When all equipment—including a 450-ton hydraulic press—is installed for the new operation, the gas division will have a capacity of 1,000 forced air furnaces monthly, reports *H. J. Sandberg*, president.

Reportedly a new feature for such units is Sandberg's automatic reset on the limit control built into each furnace.

### Whitman & Barnes Announce New Quarters in Los Angeles

LOS ANGELES—A move of their Los Angeles branch to larger quarters at 5226 E. Washington Blvd., is announced by Whitman & Barnes, manufacturers of reamers, drills and carbide tools.

The new sales office and branch warehouse provides 5,400 sq. ft. of space, completely sprinklered, and will assure more complete inventories and better service for Western distributors and customers. *R. J. Conroy* is West Coast district manager.

### AP&CC Moves Offices

LOS ANGELES—All company executive offices of American Potash & Chemical Corp. are now located in a newly-constructed building at 3000 W. Sixth St. The three-story building occupies more than 40,000 sq. ft. of office space.

## Topp Manufacturing Opens Plant No. 5 in L. A.

LOS ANGELES—With its recent opening of Plant No. 5 at 10,200 Aviation Blvd. and 102nd St., Topp Manufacturing Company has doubled its plant floor space. The new 60,000-sq. ft. facility adjacent to International Airport houses the recently-established Communications Division of the company, which is a division of Topp Industries, Inc.

Production and quality control operations take up 46,000 sq. ft. of the new plant while some 14,000 sq. ft. are occupied by engineering and administrative personnel. The new building brings the total floor space of the company to 150,000 sq. ft.

Substantial new contracts from the Civil Aeronautics Administration to the Communications division bring its total backlog to about \$5,000,000. Most of the contracts are for Topp's VOR navigational aid systems and for sub-systems for the CAA's instrument landing systems.

Present employment at the division is 140, which is expected to increase to 200 by next month.

## Goodyear Rubber to Make Lorig-Aligner Rolls

SAN FRANCISCO—Goodyear Rubber Company, 2400 Third St., has been named by U. S. Steel as an exclusive licensee in the West to manufacture Lorig-Aligner self-centering rubber covered rolls.

Lorig-Aligner is the registered trademark of U. S. Steel for a line of rolls and pulleys said to provide positive and constant centering and aligning of materials under almost any condition. The rolls are used in sheet metal, printing, abrasive belt grinding, paper and other industries, as well as in non-ferrous metal processing and numerous belted conveying systems.

George Farwell, Goodyear sales manager, recently returned from a U. S. Steel indoctrination course.

## Western Colleges to Use Computers in Lab Work

PASADENA, CALIF.—To strengthen automation training and research in the nation's schools, two Western universities will install Burroughs 205 electronic computing systems for use in laboratory instruction, statistical analysis and research.

The high speed data processing equipment will be purchased by the University of Utah, Salt Lake City, and the University of Denver, Colorado. Burroughs Corporation is making special financial arrangements on university contracts to facilitate such purchases. Use of the equipment will range from air pollution studies to high-frequency radio design.

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Low cost, lightweight casters made in swivel and rigid types in 12 sizes ranging from 3½" to 8" wheel diameters. Five wheel types and Hyatt roller or plain bearings. Capacity range 140-800 lbs.

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Matched sets of swivel and rigid types are made in seven sizes (4" to 12" dia.) for extremely heavy service. Five wheel types. Hyatt or Timken bearings. Pressure gun lubrication. Capacity range 700-6000 lbs.

**"V" Groove Casters & Wheels**  
For operating on angle iron track or on floor, here are six matched sets of swivel and rigid type "V" groove casters. Wheels are Ni-Steel iron or cast steel. Bearings are Hyatt roller. Pressure gun lubrication. Capacity range 800-15,000 lbs.

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## Plant Expansions Continue in LA and Bay Area

**SAN FRANCISCO**—A greater number of projects, but a smaller dollar investment in new manufacturing plants and expansions were scheduled in Northern California during the first five months of this year.

Number of projects this year was 511—118 more than the similar period in 1957. Total amount of money committed was \$143,098,990—\$11,843,650 less than last year's similar period.

According to **Lewis M. Holland**, San Francisco Chamber of Commerce industrial department manager, "The accelerated increase in the number of projects indicates that faith in the continued growth of the area and the West Coast, industrialwise, has a sound basis in fact."

Total number of new plants for this year's first five months was 135, last year's 119. There were also 376 expansions compared to 274 in 1957.

### N. Y. Air Brake's Kalamazoo Division Changes Name

**KALAMAZOO, MICH.**—The name of the Kalamazoo Division of New York Air Brake Co. has been changed to the Hydreco Division to associate the unit more closely with the trade name Hydreco, carried by industrial hydraulic equipment manufactured there. The division makes hydraulic pumps, con-

**LOS ANGELES**—A 49% increase in new manufacturing industry growth during the first half of 1958 was recorded for Los Angeles County, according to a report from Los Angeles Chamber of Commerce.

Total capital investment by new companies has reached \$13,365,000, compared with \$8,966,000 for the same period in 1957. Although local manufacturing plant expansions are down—\$71,656,000 this year versus \$90,382,000 for last year's similar period—preliminary forecasts indicate a continuance at the current pace for the remainder of the year.

According to **J. W. McClellan**, chairman of the Chamber's industrial development committee, it appears that the County will end the current year with a capital investment in new plants and expansions of about \$150,000,000. Last year's total was \$163,000, he said.

trol valves and cylinders used in earthmoving and material handling equipment, agricultural machinery and machine tools.

### New Portland Distributor

**PORTLAND**—Congoleum-Nairn, Inc. has appointed Pacific Yard Service, 539 SE Division Place, as its wholesale distributor in the Portland and Eugene areas.

## Shultz Co. Named Rep for Amballoy Steel Line

**SOUTH GATE, CALIF.**—West Coast sales representative for the Amballoy line of specialty steels is **Shultz Steel Co.**, 5321 Firestone Blvd., according to a recent announcement.

Manufactured by the **A. M. Byers Co.**, Pittsburgh, Pa., Amballoy steels are used in aircraft, automotive, mining, shipbuilding and other industries that need steels of exacting composition and high strength.

The new representative firm is headed by **Gordon W. Shultz**, a veteran of the steelmaking industry in the West.

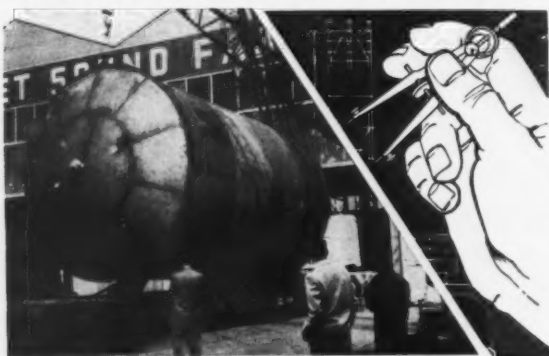
### Sunnybrook Dairy Plant

**PORTLAND**—A new \$300,000 dairy processing plant is to be built here by **Sunnybrook Farms**, an expansion to serve the firm's growing market for milk, cottage cheese and ice cream. The new facility will be on a two-acre site at NE Halsey and 85th Ave.

### Stanley Firm Changes Name

**NEW BRITAIN, CONN.**—The Stanley Works has announced that the name of its subsidiary **The Humason Mfg. Co.** of Forestville, Conn., has been changed to **Stanley-Humason, Inc.** Products of the subsidiary include coil springs, wire forms, flat springs, screw machine products and light stamping and assembled products.

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**WESTERN INDUSTRY — August 1958**



## Pierce Crane Carrier Sales Established in Portland

PORTLAND—Pierce Crane Carrier Sales Co., was organized recently to design, manufacture and distribute Crane Carriers to be marketed throughout this country and Canada. The new firm is located at 1306 S. E. Ninth Ave. and manufacturing operations will take place in the Portland plant of Pierce Trailer & Equipment Co.

The new line will include Crane carriers from 25 to 60-ton capacities, designed for heavy construction industry, mining or logging operations or other industries that use a mobile Crane carrier.

Distribution in Northern California, the Northwest, Idaho, Montana and Western Canada will be handled by *Frank Leslie*, with other areas covered by *Bob Fox*.

## Fluor Corporation Buys Summerbell Roof Assets

LOS ANGELES—Now operating as a division of The Fluor Corporation, Ltd., is Summerbell Roof Structures, large manufacturer of glued-laminated timber products and wood roof trusses.

In announcing purchase of the Summerbell assets, Fluor officials said the acquisition will add an important new companion line to its present wood manufacturing business, which includes cooling towers, tanks, wood stave pipe and pole-line crossarms.

## Mail-Well to Distribute Metal Edge M-H Products

SAN GABRIEL, CALIF.—National Metal Edge Box Co., Barrington, N. J., has named the Mail-Well Envelope Co. of California here as a regional distributor for its material handling specialties.

The Mail-Well firm, located at 809 West Santa Anita St., will have exclusive distribution of Metal Edge material handling products in Southern California, according to spokesmen for the two firms.

## Western Fire Equipment Co. Appointed Distributor

SAN FRANCISCO—Western Fire Equipment Co., 69 Main St., now stocks representative models of the Pacific Mercury electric plants designed specifically for fire departments. According to *Robert Orr*, manager, complete parts and service departments are maintained here and in its Portland branch which will service fire departments in the Northwest.

## New Portland Firm

PORTLAND—Central Burner Service, Inc., a firm that will specialize in maintenance and repair of oil and gas-fired furnaces and boilers, was recently organized here by a group of former employees of Power Plant Engineering Co. The new company is an affiliate of Automatic Oil Co., 2191 NW Savier.



**Essential tool of the boatbuilding industry...**  
the template—pattern for parts of the thousands of boats  
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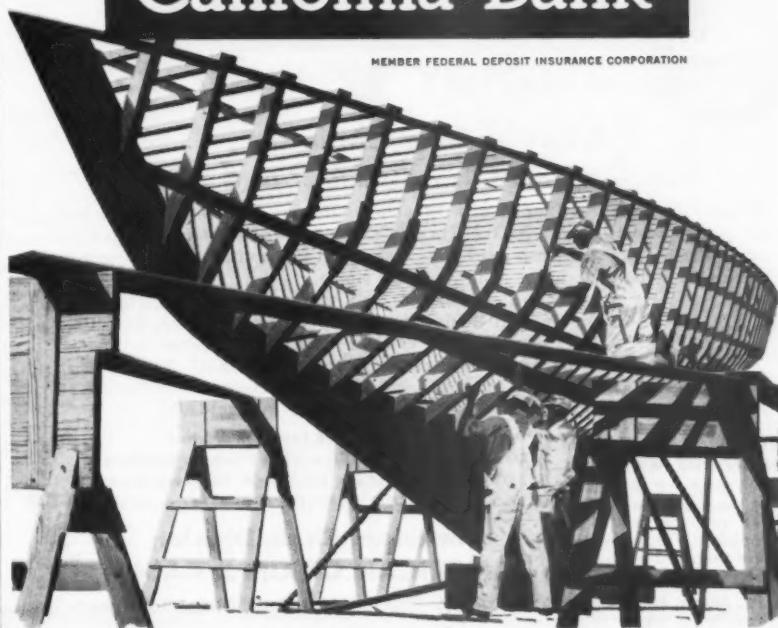


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... for more details, circle No. 51 on Reader Service Postcard

## Beckman Helipot to Move Operations to Fullerton

FULLERTON, CALIF.—Helipot Division of Beckman Instruments, Inc., is moving its personnel, production and equipment to the firm's corporate headquarters here, following sale of the Helipot plant at Newport Beach to Louis Lesser Enterprises, Ltd., Beverly Hills real estate development firm.

Beckman's Liston-Becker manufacturing facility at Stamford, Conn., also is being transferred here. The Helipot unit will operate in a newly-constructed 100,000-sq. ft. building. Transfer will be completed by the end of September.

Integration of the Liston-Becker facility with the Process Instruments Division here will be completed this month.

## Perkin Firm Appoints Eastern Representatives

EL SEGUNDO, CALIF.—Perkin Engineering Corp. has appointed D-B Associates of Dewitt (Syracuse), N. Y., as its manufacturers' representative in the upstate New York territory.

The newly-formed electronic rep firm will handle the Perkin line of d-c. power supplies, a-c line voltage regulators and transistorized static inverters, announces George W. Mousel, sales manager of the Perkin firm located at 345 Kansas St., here.

## U. S. Relay Co. Builds Facility in Azusa

AZUSA, CALIF.—Nearing completion at 717 N. Coney Ave. is a new plant for U. S. Relay Co., a leading Western manufacturer of relays and packaged

electronics systems.

The new facility, representing about a \$350,000 investment, will provide over 30,000 sq. ft. for production, sales and greatly enlarged engineering departments.

A 10,000-sq. ft. isolated building area will house dust-free temperature and humidity controlled special facilities for producing contaminate-free relays and packaged control systems.

## Kaiser Gypsum Handles National Metal Lath Line

OAKLAND, CALIF.—The line of metal lath products by National Gypsum Co., Buffalo, N. Y., will be distributed in the West by Kaiser Gypsum Co., Inc., reports Colin Campbell, general sales manager of the Oakland firm.

By an agreement starting July 1 Kaiser will be distributor for the 11 Western states, Hawaii and Alaska. The new metal lath line, produced at Niles, Ohio, will be marketed under the National Gypsum brand but sold through the Kaiser organization.

## American Pulley Award

SEATTLE—In recognition for sales accomplishments during this year's first quarter, Northwest Chains & Sprockets, Inc., was named regional sales award winner by the American Pulley Co. Gerald P. Weishaar, American Pulley's regional manager from Oakland, and Henry F. Adams, Seattle district manager, made the presentation at a banquet here recently. N. L. Woolworth, salesman, received the highest individual award.

## Rucker to Make System for Lunar Probe Program

OAKLAND—Contract for the hydraulic control and drive system on the space vehicle radio antenna to be erected at Goldstone Test Station, Camp Irwin, Calif., has been awarded to the Rucker Company here.

According to C. J. Woodward, Rucker vice president, the drive and control system will be the "nerve center" of the project, taking electronic signals from data processing equipment and precisely rotating the antenna as it locates and tracks satellites or lunar vehicles. The system will operate automatically by remote control, unaffected by elements or other factors.

The Army Jet Propulsion Laboratory, prime contractor on the project, states the 85-ft. diameter antenna is expected to be in operation by the end of this year.

## Ryan Expansion Doubles Torrance Plant Capacity

TORRANCE, CALIF.—In its largest single plant expansion of recent years, Ryan Aeronautical Co. has doubled the capacity of its plant here. The expansion program, costing about \$820,000, provides a total of 140,000 sq. ft., consisting of two factory structures and an addition to office facilities.

The additional space was required for production of Ryan's Firebee, jet target drone.

The expansion here brings total floor space of all Ryan facilities to 1,500,000 sq. ft. Headquarters and main plant are in San Diego.

## Rocket-Valve Corp. is New Denver Firm

DENVER—Plans to invest more than \$500,000 dollars in equipment for a testing laboratory and machinery have been announced by Rocket-Valve Corp., a new Denver firm at 2839 E. Second Ave.

The firm will manufacture special low temperature valves and other specialized products for rockets and missiles.

President of the company is Carmen Bibbo, formerly with the National Advisory Committee for Aeronautics. He holds patents on valving systems for propellants at missile launching sites and designed the 24-foot control for NACA's wind tunnel at Cleveland.

The company, which expects to employ about 75 persons when operations get under way, is currently working with sub-contractors in the Denver area in missile work.

## C & H Open House

PORTLAND—At recent open house ceremonies here, California & Hawaiian Sugar Corp. showed to visitors its new \$250,000 bulk and liquid sugar distribution facility. The new plant at 5300 SE McLoughlin Blvd. features automatic equipment for bulk handling of sugar.



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## Plastimayd Corp. to Double Space in New Quarters

PORTLAND—Looking forward to doubling both its space and production is the Plastimayd Corp., which will move into new quarters at SE. Seventh and Grant St.

Milton Druck, Plastimayd president, has announced that his firm has leased the building formerly occupied by Pak-Well Paper Products Co., which will move into newly built quarters in Milwaukie Industrial Park.

One of the West Coast's largest manufacturers of vinyl plastics, Plastimayd will also add new high-speed machinery and some personnel when it transfers its operations to the 20,000-sq. ft. building. Present address is SE Sixth and Yamhill St.

## Research Specialties Begins Work on New Facility

RICHMOND, CALIF. — Construction is well under way by Research Specialties Co. on its new \$275,000 plant for manufacture of research instruments and radiochemicals for medical and industrial research.

First of two units to be built on a three-acre site, the 22,000-sq. ft. facility is slated for October completion. Products will be radiochemicals such as C<sup>14</sup> labelled compounds, and instruments such as micropipettes, automatic frac-

tion collectors, equipment for chromatography and electrophoresis, tube heaters and zone melters.

About 60 persons will be employed at the new plant, according to *Hans Baruch*, president of the firm, which has general offices in nearby Berkeley.

## Salt Lake City Rep Named by Perry Kilsby

SALT LAKE CITY — Tubular materials manufactured by Perry Kilsby, Inc., Los Angeles, will be handled in the Intermountain area by *John A. Gross*, recently named agent. A former employee of Perry Kilsby, Gross is equipped to give aid in selection and use of all types of tubing—alloy, carbon, stainless, aluminum and polyvinyl chloride. His headquarters are at 2400 Walker's Lane, where the phone number is CRestwood 7-3801.

## Fairchild in EIA

PALO ALTO, CALIF. — Fairchild Semiconductor Corp., 844 Charleston Road, is one of six firms recently accepted for membership in the Electronic Industries Association. Memberships were approved at the Association's annual spring conference in Washington, D. C.

## Southwestern Buys Building

LOS ANGELES — Southwestern Engineering Co. has announced the recent purchase of a building at 4501 S. Santa Fe Ave., which will house the firm's separator division.

## Telecomputing Announces Purchase of Autron Eng., Inc.

LOS ANGELES — Telecomputing Corporation is broadening its role as a principal manufacturer and subcontractor to industry and defense, said its president, *William R. Whitaker*, in announcing the recent acquisition of Autron Engineering, Inc., Los Angeles precision instrument manufacturing firm.

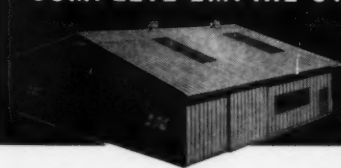
Facilities and personnel of the Autron firm have been integrated into Telecomputing's data instrument division at North Hollywood to step up production of Neuron counters. *Bob Poole*, former president of Autron, will head up sales activities of Neuron and associated products at the division.

## Parker Completes Valve Testing Installation

LOS ANGELES — The West's first cryogenics test installation solely for testing valves and similar components in liquid oxygen, nitrogen, helium, etc., was recently completed by Parker Aircraft Co., subsidiary of Parker-Hannafin Corp.

The \$65,000 installation, coupled with other recently-installed test apparatus, enables the company to test valves and hydraulic units for extreme environmental conditions in temperatures from minus 400 deg. to plus 1,200.

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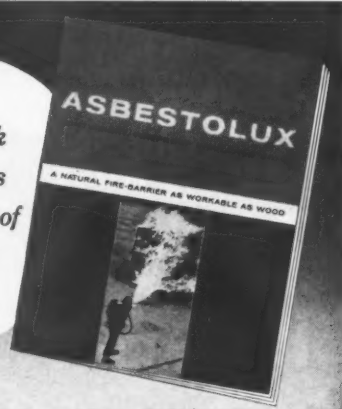
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## McKay Co. Names Berkeley Firm as Distributor

OAKLAND, CALIF.—R. G. Rollin of the Harlan C. McKay Co., representative for the automotive division of Clark Equipment Co., announces appointment of West Coast Engine & Equipment Co. of Berkeley, Calif., as a distributor for Clark Torcon torque converter parts. The Berkeley firm, located at 1081 East Shore Highway, will handle and service the products in the Northern California area. The McKay Co., with headquarters in Portland, also maintains offices in Oakland.

## Howard-Cooper to Build New Portland Facilities

PORTLAND — Under construction by Howard-Cooper Corp., distributor of heavy construction and logging equipment, are new plant and office facilities scheduled for September occupancy.

The new plant is on a 6½-acre tract at N. E. 85th and Killingsworth St., and will provide some 40,000 sq. ft. of space, including 12,000 for office area. Main part of the building is of tilt-up concrete construction and the facility has a surfaced yard area where most of the heavy equipment is to be displayed and stored.

## To Handle Potentiometers

RIVERSIDE, CALIF.—Three Western distributors are among those added recently by Bourns Laboratories to handle their Trimit commercial-type screw-actuated potentiometer. All in California, they are Dunlap Radio & Television Supply Co., Stockton, Schad Electronic Supply, and Peninsula Television and Radio Supply, both of San Jose.

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## Baymar Pacific Offers Plant Engineering Services

BURLINGAME, CALIF.—Baymar Pacific, Inc., is a recently organized firm that will specialize in the design and construction of mill, storage and processing plants.

Located at 1011 Industrial Road, it offers a variety of engineering services including preliminary engineering studies for management planning, such as plant or method improvement, site adaptability for new plants, cost and efficiency studies and plant arrangement.

Major attention will be given to bulk material handling projects, according to Richard F. Marken and Worth Bayles, who organized the new company. Marken for the last ten years has been a consulting engineer in grain and mining in this country and South Amer-

ica. Bayles, well known in construction and material handling in the West and in South America, is designer of a grain dryer which has become an industry standard.

## Mill & Logging Supply Has New Management

ABERDEEN, WASH.—John W. Rieker, formerly with Sterling Motors in the Northwest and in Los Angeles, recently purchased an interest in the Mill & Logging Co. of Aberdeen, and is now its president.

Mill & Logging Supply, one of the oldest industrial supply houses in the state, was formerly a subsidiary company of the Washington Belt & Rubber Co. of Tacoma and Seattle.

The supply firm recently assumed the distributorship for Union Wire Rope, covering the West Coast counties of Washington.

# Westerners at Work

## Tube Forgings of America, Inc.

... reports that David A. Young is now Northwest field representative covering Oregon, Washington, Idaho and Montana. Young will make his headquarters at the firm's main office in Portland. Rodney C. Bean, whom Young replaces, was promoted to Southeast district manager and transferred to Atlanta, Ga.

## Yale & Towne Mfg. Co.

... reports that C. H. "Chuck" Fowler is now handling sales for the area from Marin to Humboldt counties in Northern California. Announcement of his permanent appointment was made by the branch sales and service office of Yale's materials handling division. Formerly working for the firm in the Oakland area, Fowler has a background of 10 years in industrial sales. He will work out of the firm's San Leandro plant where Yale & Towne's G3P series of lumber industry fork lifts are manufactured.

## M. E. Canfield Co.

... selects N. Robert Semple to be assistant general manager and to coordinate sales-service activities of the Southern California material handling firm. Semple has been with Lewis-Shepard Products, Inc., of Watertown, Mass., for the last six years. The Canfield firm, located at 419 E. Third St., Los Angeles, is Lewis-Shepard's Southern California distributor.

## General Electric Co.

... announces recent promotions of H. R. Oldfield Jr. and C. C. Lasher. Oldfield, former general manager of the Computer Department at Phoenix, will develop and head a new company component in the Boston area, the name of which has not yet been disclosed. Lasher, who has been manager of marketing in the Computer department, will succeed him as general manager of this unit.

## Hughes Aircraft Co.

... has named John W. Black plant manager of its Tucson operation, succeeding George Sinclair who died in February. Louis L. Reasor, formerly manager of services, succeeds Black as assistant plant manager. Black has been employed by the company since 1940, Reasor since 1953.

## Allen-Bradley Co.

... designates Frank J. Connolly as manager of the Los Angeles office and Robert White as distributor sales representative. Connolly succeeds H. D. Easterbrook who has retired. A veteran of almost 30 years of sales and engineering experience in the control industry, Connolly was previously associated



F. Connolly



R. White

with the Welding Positioning Equipment Division of the Worthington Corp., as divisional manager. White has been with Allen-Bradley since 1949, most recently with the Distributor Sales Division.

## Bethlehem Pacific Coast Steel Corp.

... selects Ken L. Grant to be superintendent of the new electric furnace department at its Seattle plant. Employed by Bethlehem Pacific for 11 years, Grant has been department superintendent at the Los Angeles plant transferring to Seattle last fall to help establish the electric furnace operation there. Two 100-ton capacity electric-arc steel making furnaces have replaced

five open hearth furnaces in Seattle as part of a \$25,000,000 expansion and modernization program.

#### Heat and Control, Inc.

... reports that **Rolland R. La Pelle** has joined its staff as manager of sales and engineering on aircraft, missile and special research furnace projects. La-Pelle was formerly West Coast manager of industrial furnace activity for Westinghouse, which discontinued that activity in March. Headquarters for LaPelle will be at the main office and plant of Heat and Control, 1615 Courtland Ave., San Francisco 10.

#### Sundstrand Turbo Div.

... announces appointment of **George F. Anisman** to the position of chief applications engineer. Anisman brings to his new position a background of over 14 years in the aircraft, missiles and rocket fields. Before joining Sundstrand he was a power plant engineer and thermodynamicist for leading missile contractors working on auxiliary power units. A period of time was devoted to design and sales engineering with emphasis on valves, controls, and regulators for missiles and aircraft.

#### J. W. Minder Chain & Gear Co.



R. Anderson

... promotes **Rodney Anderson** to be district sales manager for its Northwest area, with headquarters in Portland. Anderson has been affiliated with the Minder organization for some time. His appointment was effective June 1.

#### Moffett Engineering, Inc.

... announces that **Will C. Hall** has been elected president, general manager and member of the board of directors. Before his affiliation with the Albany, Calif., manufacturer of overhead cranes, Hall was president of Pacific Coast Engineering, Alameda. He is junior past president of the California Metal Trades Association.

#### Rohr Aircraft Corp.

... names **J. C. Emerson** general superintendent of production at its main Chula Vista, Calif. plant. Emerson joined Rohr in 1941 as an inspector and recently has been tool superintendent. He will direct all factory production operations.

#### Monsanto Chemical Co.

... names **Roy L. Brandenburger** of St. Louis to be senior representative on the West Coast. General manager of the company's consumer products division, which he joined in 1952, Brandenburger will give advice and assistance to marketing and operating personnel in Monsanto's various divisions in the West. He will be located at Santa Clara, Calif. Monsanto has plants there, in Avon and Long Beach, Calif.; in Seattle, and in Soda Springs, Idaho.

#### Bristol Co.



R. F. Faeth

... announces appointment of **Robert F. Faeth** as office engineer. Formerly a technical assistant at Cal-Tech, Faeth will work out of the Los Angeles district office and warehouse of Bristol Co., subsidiary of American Chain and Cable.

#### American Potash & Chemical Corp.

... reports personnel promotions concerning men at its Los Angeles plant. **Russell S. Sunderlin**, plant manager, takes over as manager of the AP&CC subsidiaries, American Lithium Chemicals, Inc., and San Antonio Chemicals, Inc. both at San Antonio, Texas. **Harold Mazza**, who has been research manager at the Los Angeles facility, becomes plant manager there.

#### Mullenbach Division

... of Electric Machinery Mfg. Co., announces promotion of **Wayne M. Biting** to the position of general manager of the electrical equipment department. Formerly sales manager, Biting has been with the company since 1946. He will assume his new responsibilities immediately.

#### Pierce Crane Carrier Sales Co.

... appoints **Bob Fox** of Van Nuys, Calif. to sell and distribute their Crane carriers. He will contact original equipment, government and export, and dealer accounts throughout the U. S. except in Northern California and the Pacific Northwest. Fox was formerly associated with Six Wheels, Inc., and Cook Brothers, and has dealt with Crane carriers for over 20 years.

#### Fairwing Corporation

... reports that **John Ives Masters** has joined its staff as sales manager. Masters recently was Western division manager of Park Name Plate Co., and also has been affiliated with C & H Supply Co. Among manufacturers Masters will represent for Fairwing are American Carbide Co., Park Name Plate Co., Norgren-Stemac, and Wolcott Eyelet Manufacturing.

#### Hyster Company

... announces five personnel changes in its engineering department: **H. C. Harbke** becomes new assistant supervisor on construction machinery in the tractor equipment division; **A. H. Huebner** is assistant supervisor on new model design in the truck division; **J. R. Aaron** becomes supervisor of the newly-created advance design group; **Howard Stewart** is promoted to staff engineer, and **R. A. Johnson** will be general supervisor of the new engineering services division.



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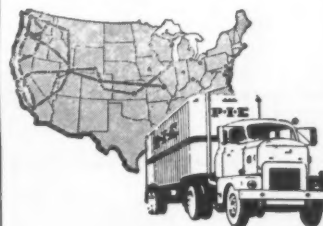
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